



ACHARYA N. G. RANGA AGRICULTURAL UNIVERSITY

In the service of farmers since 1964



Acharya N. G. Ranga Agricultural University
Lam, Guntur-522034
Andhra Pradesh

www.angrau.ac.in



Prepared by
Dr. Cherukuri Sreenivasa Rao
Dean of Agriculture &
Director (i/c), Planning & Monitoring Cell
Acharya N G Ranga Agricultural University

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Dr. P. V. Satyanarayana
Vice-Chancellor
Acharya N G Ranga Agricultural University



It gives me immense pleasure to present this publication highlighting the rich legacy, achievements and contributions of Acharya N.G. Ranga Agricultural University (ANGRAU) to agricultural education, research and extension.

Established in 1964, ANGRAU has completed more than six decades of dedicated service to the farming community and the sustainable development of agriculture and allied sectors in Andhra Pradesh. The University's three core mandates—Education, Research and Extension—continue to guide its growth and service.

Through its academic programmes, ANGRAU has produced about 50,000 graduates, contributing significantly to human resource development in agriculture and allied sciences. The University was also among the first in the country to introduce Diploma programmes in Agriculture, aimed at developing skilled human resources to support the agriculture and allied sectors. Its extensive research network has developed and disseminated numerous improved crop varieties, including 136 in rice, 29 in jowar, 22 in finger millet, 12 in foxtail millet, 21 in black gram, 13 in green gram, 11 in red gram, 15 in Bengal gram, 35 in groundnut, 9 in oilseeds, 27 in cotton, 11 in mesta and 32 in sugarcane, besides several location-specific technologies. Guided by the motto "Reach the Unreached," the University's extensive network of KVKs, DAATTCs, Extension Units has strengthened technology transfer, capacity building and farmer-oriented services. Universities had well-established linkages with Government departments, extension functionaries and farming communities for technology transfer led to the enhancement of farm income and livelihood. These contributions have played an important role in enhancing agricultural productivity and significantly contributing to the GDP.

This publication reflects the collective efforts of generations of faculty, scientists, staff, students and farmers. It reaffirms ANGRAU's commitment to innovation, sustainability and technology-driven agriculture for the benefit of farming communities and society.


(P. V. SATYANARAYANA)
VICE-CHANCELLOR



THE GENESIS & HISTORICAL BACKGROUND



The importance of applying science and technology to agricultural development was recognized as early as the beginning of this century. Among the several commissions appointed to suggest steps for streamlining agricultural development, the Royal Commission (1926) emphasized the need for a strong research base in agriculture.

Subsequently, the recommendations of the *Radhakrishnan Commission (1949)* on university education led to the establishment of rural universities for the overall development of agriculture and rural life in the country. Later, the Government of India constituted the *First Joint Indo-American Team (1955)* to study the status and future needs of agricultural education in the country. The report of this commission laid the foundation for all subsequent developments in agricultural education in India.

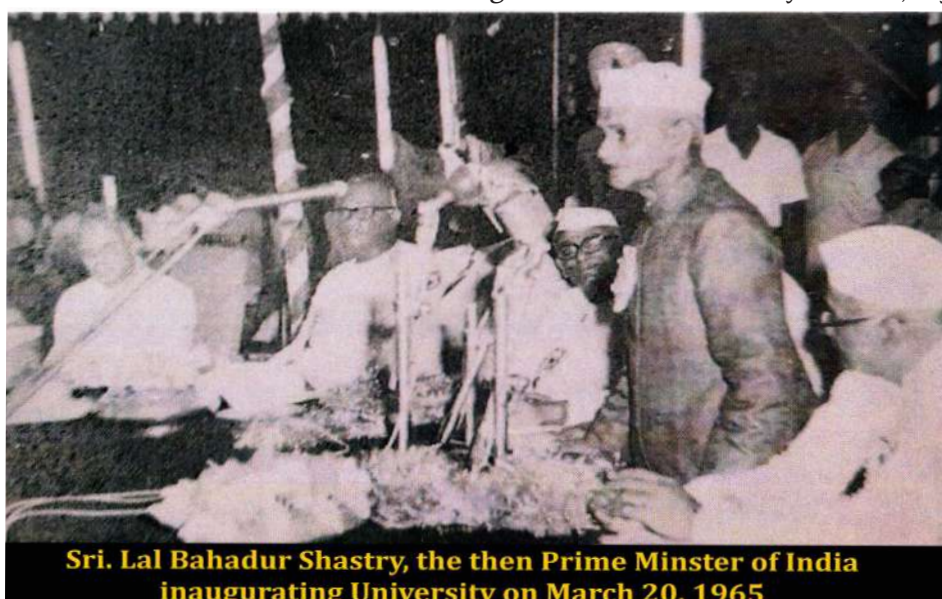
However, due to the lack of specific recommendations, the Government of India appointed the *Second Joint Indo-American Team (1960)*, headed by Dr. M.S. Randhawa, the then Vice President of the Indian Council of Agricultural Research. The team submitted its report in 1960, specifically recommending the establishment of farm universities and outlining their basic objectives:

- Institutional autonomy
- Inclusion of agriculture, veterinary/animal husbandry, and home science
- Integration of teaching, research, and extension

Later, the report of the *Second National Education Commission (1964-66)*, headed by Dr. D.S. Kothari, Chairman of the University Grants Commission, emphasized the need for establishing at least one Agricultural University in each Indian state. Consequently, the *Andhra Pradesh Agricultural University (APAU)* was established on June 12, 1964, in Hyderabad, under the APAU Act of 1963. The University was modeled on the US Land-Grant University system in collaboration with Kansas State University, USA, with the **mandate** to:

- Train human resources needed for agriculture, animal husbandry, home science, and allied sectors for the development of the State of Andhra Pradesh (Education)
- Constantly strive to generate technologies for improving the production of crops and livestock, home science, and allied sectors (Research)
- Assist in the transfer of technology through the dissemination of knowledge in collaboration with the Development Departments of the Government (Extension).

In accordance with the provisions of the Andhra Pradesh Agricultural University Act of 1963, several existing Colleges of Agriculture and Veterinary Science were transferred from the universities to which they had been affiliated to the Andhra Pradesh Agricultural University in June 1964. These colleges included the College of Agriculture and Veterinary Science, Hyderabad



Sri. Lal Bahadur Shastri, the then Prime Minister of India inaugurating University on March 20, 1965

(established in 1961, formerly affiliated with Osmania University), Agricultural College, Bapatla (established in 1945, formerly affiliated with Andhra University), Sri Venkateswara Agricultural College, Tirupati (established in 1961, formerly affiliated with Sri Venkateswara University), and Andhra Veterinary College, Tirupati (established in 1961, also formerly affiliated with Sri Venkateswara University).

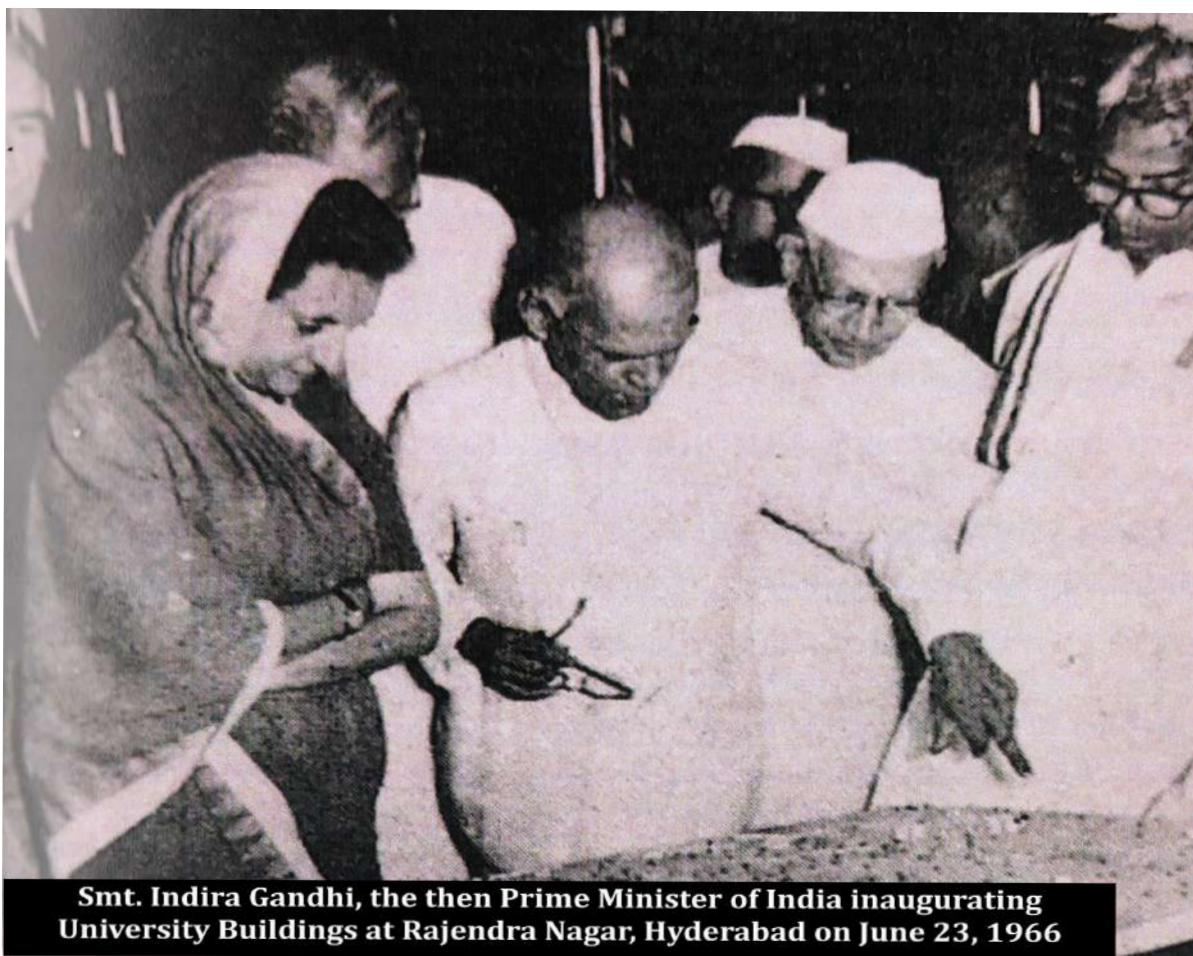
Additionally, 41 Agricultural Research Stations under the Department of Agriculture and four Research Stations under the Animal Husbandry Department were transferred to the University in July 1966 and May 1967, respectively.

The University was formally inaugurated on March 20, 1965, by the late Shri Lal Bahadur Shastri, the then Hon'ble Prime Minister of India. The University's building at Rajendranagar, Hyderabad, was inaugurated by Smt. Indira Gandhi, the then Hon'ble Prime Minister of India, on June 23, 1966.

The University underwent a significant renaming ceremony on November 7, 1996, becoming Acharya N.G. Ranga Agricultural University (ANGRAU) as a tribute to the legacy of Acharya N.G. Ranga. Renowned as an exceptional Parliamentarian, Acharya N.G. Ranga dedicated himself to the service of farmers, leaving an indelible mark on the agricultural landscape. He is revered not only for his political contributions but also for his role as an esteemed educationist, Kisan leader, and freedom fighter. To commemorate his enduring impact, a life-sized bronze statue of Acharya N.G. Ranga was unveiled on November 7, 1998, at the University's main campus by His Excellency, Dr. C. Rangarajan, the Governor of Andhra Pradesh.

Institutional Growth during 1964-2004 (40 years)

- The growth and development of the University in terms of expanding teaching,



Smt. Indira Gandhi, the then Prime Minister of India inaugurating University Buildings at Rajendra Nagar, Hyderabad on June 23, 1966

research and extension activities have been exemplary.

- The University, which started with three campuses in 1964, has expanded to eight campuses by 2004 and increased the number of constituent colleges from six to thirteen. The eight campuses are located in Rajendranagar, Bapatla, Tirupati, Aswaraopet, Naira, Nandyal, Muthukur, and Gannavaram. Six of these campuses have an Agricultural College; the exceptions are Muthukur, which houses a College of Fishery Science, and Gannavaram, where a College of Veterinary Science is located. There are two Veterinary Colleges at the Rajendranagar and Tirupati campuses. Additionally, there are two Home Science Colleges in Hyderabad and Bapatla and a College of Agricultural Engineering in Bapatla. Besides these, 17 Agricultural and Veterinary Polytechnics have been established at various locations throughout the state.
- Initially, undergraduate programs were offered at all teaching campuses, with postgraduate programs available only at the Rajendranagar campus. Over time, postgraduate programs were introduced at Bapatla and Tirupati campuses. Subsequently, new degree programs leading to B.Sc. (Horticulture), B.Tech. (Dairying), B.F.Sc., and B.Tech. (Agricultural Engineering) were introduced at the College of Agriculture, Rajendranagar, the College of Veterinary Science, Tirupati, the

College of Fishery Science, Muthukur, and the College of Agricultural Engineering, Bapatla, in 1983, 1990, 1992, and 1993, respectively. In 2003, new undergraduate courses like B.Tech. (Food Science) and B.Sc. (Commercial Agriculture & Business Management) were started. A postgraduate program leading to a Master of Agriculture Business Management began in 1999 at Rajendranagar. Inter-faculty postgraduate programs such as M.Sc. (Food Science and Technology), M.Sc. (Agricultural Biotechnology), M.V.Sc. (Veterinary Biotechnology) were introduced in 2001, and M.Sc. (Environmental Science and Technology) in 2003.

- Academic activities have thus expanded to all thirteen colleges across the eight campuses, as well as to the 17 Agricultural and Animal Husbandry Polytechnics.
- With the acquisition of 41 Agricultural Research Stations and four Veterinary Research Stations at its inception, the University has diversified its research activities to address ongoing agricultural issues. To achieve these objectives, the University established several new research stations focusing on specific crops and local areas across the state. By 2004, the number of research stations had increased to 66, with over 250 additional research schemes. The implementation of the National Agricultural Research Project (NARP) in 1979 also helped to develop the infrastructure for research programs



His excellency Sri Krishan Kant, Governor of Andhra Pradesh, Dr. M.V. Rao, Vice-Chancellor, Dr. Arun Kumar, Nobel Laureate and Dr. V. Kurien, Chairman, NDOB at XXVIII Annual Convocation, 1995

- The number of research stations increased from 45 to 66 by 2004, alongside the growth of faculty, scientists, supporting, and administrative staff.
- The University's extension wing supports the State Government in disseminating agricultural technologies. Initially, extension activities were carried out through subject matter specialists in the late sixties and early seventies. Over the years, various methods such as demonstrations, farmer training, print media (including bulletins and agricultural almanacs), AIR, electronic media, and information centers with modern communication tools have been extensively used to disseminate information to the farming community. To bridge the gap between potential and actual crop yields, new initiatives such as establishing District Agricultural Advisory and Transfer of Technology Centres (DAATTCs) have been undertaken in 1998.
- By 2004, there were 12 Krishi Vigyan Kendras, an Extension Education Institute (EEI), an Agricultural Information and Communication Centre, 22 District Agricultural Advisory and Transfer of Technology Centres operating across the state, an Agricultural Technology

Information Centre, Crop Expert and Crop Escort Teams, a Toll-Free Call Centre (Parishkaram), and an Electronic Media Wing (Rythu Mitra and Annadata-Velugubata).

- By 2004, the University comprised eight teaching campuses with 13 constituent colleges, 17 polytechnics, and 66 research stations across the state, including seven Regional Agricultural Research Stations located in each of the seven Agro-climatic Zones of the state.

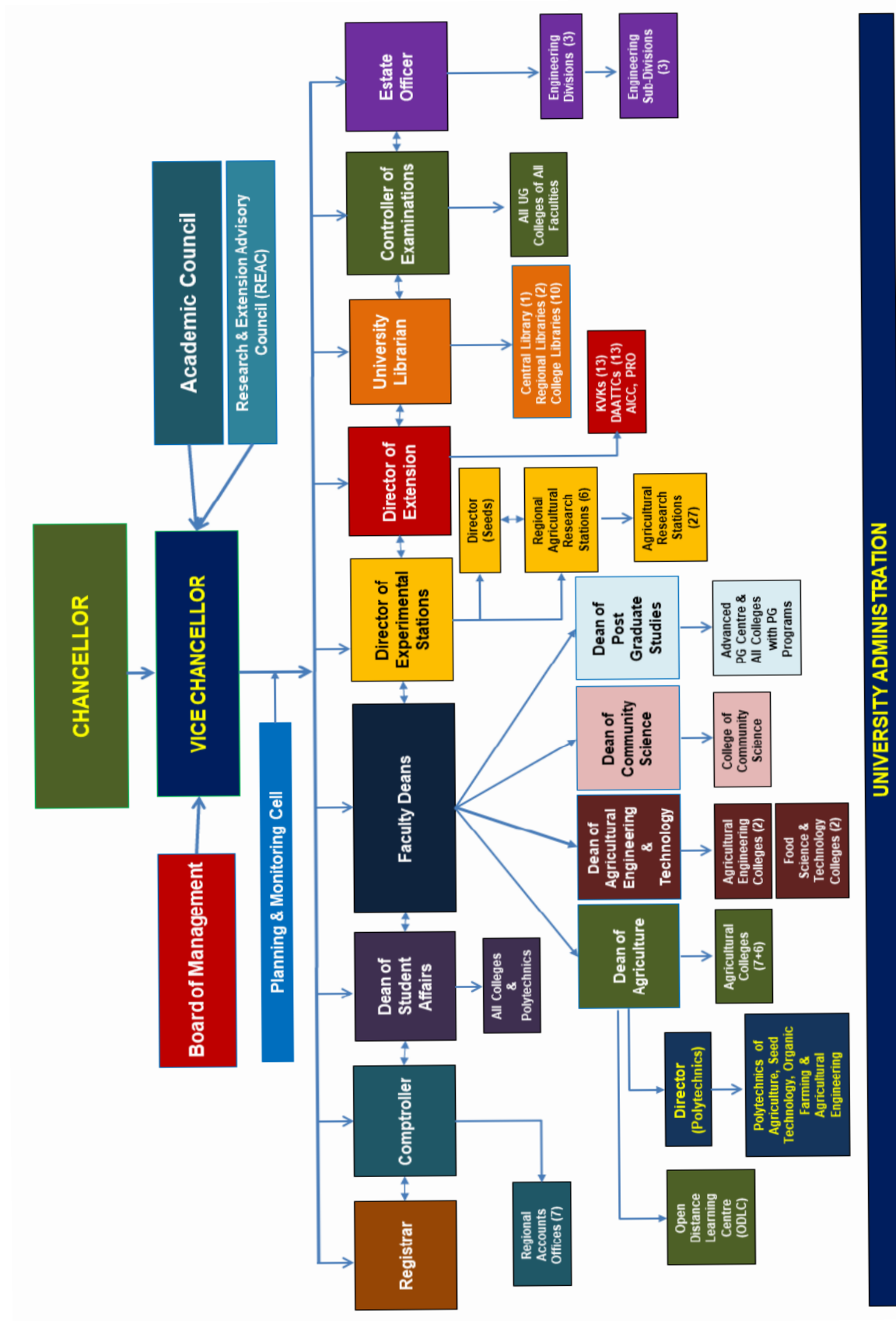
Milestones during 2005-2024 (20 years):

Sri Venkateswara Veterinary University (SVVU) was established in 2005 by bifurcating ANGRAU under Act 18 of 2005. In 2007, Andhra Pradesh Horticultural University (APHU) was established by bifurcating ANGRAU under Act 30 of 2007.

Following the bifurcation of Andhra Pradesh State into two states—residual Andhra Pradesh and Telangana—on *June 2, 2014*, as per the Andhra Pradesh Reorganization Act of 2014, ANGRAU was also bifurcated 'on order to serve basis'. Acharya N G Ranga Agricultural University now serves the state of residual Andhra Pradesh, with its headquarters at Lam, Guntur. The foundation stone of new head quarter at Lam, Guntur



Sir Radha Mohan Singh, Minister for Agriculture, Govt. of India in the presence of Sri Nara Chandrababu Naidu, Chief Minister of Andhra Pradesh and Sri M. Venkaiah Naidu, Minister of Urban Development, GoI, laid Foundation Stone of New Head Quarters of ANGRAU at Lam, Guntur on 16-11-2015



UNIVERSITY ADMINISTRATION



was laid down on 16th November 2015 by Sri Radha Mohan Singh, Minister for Agriculture, Government of India in the presence of Sri. Nara Chandrababu Naidu, Chief Minister of Andhra Pradesh and Sri. M. Venkaiah Naidu, Minister of Urban Development, Housing and Urban Poverty Alleviation and Parliamentary Affairs, Government of India.

ANGRAU at Lam, Guntur, continues to serve the students and farmers of the 26 districts of Andhra Pradesh with renewed interest and dedication.

ANGRAU is one of the leading agricultural universities in the country, accredited by the Indian Council of Agricultural Research (ICAR) and the University Grants Commission (UGC). As one of the largest universities in India, it caters to the needs of millions of farmers and thousands of scholars not only in Andhra Pradesh but also across India.

THE MANDATE

THE VISION

- To provide opportunities for citizens of the state and country to receive education in the broad field of agriculture, and to promote research and extension programs in agriculture and allied sciences.
- To strengthen undergraduate and postgraduate teaching by periodically revising syllabi to meet the challenges in the rapidly changing agricultural landscape.
- To generate technologies aimed at improving farm production and farmers' income through location-specific research in agriculture and allied sciences.
- To assist in testing and disseminating developed technologies to government departments, ensuring the sustainability and profitability of agriculture.
- To provide opportunities for rural youth and women to learn and adopt improved agro-technologies.
- To revitalize extension activities by creating specific infrastructure in each district.



ADMINISTRATIVE SETUP

His/Her Excellency, the Governor of Andhra Pradesh, serves as the Chancellor of the University. The Vice-Chancellor acts as the Chief Executive of Acharya N.G. Ranga Agricultural University.

The administration of ANGRAU is governed by three authoritative bodies:

- The Board of Management (BoM)
- The Academic Council (AC) and the Faculty Boards (FB)
- The Research and Extension Advisory Council (REAC)

The organogram of the University is presented in the page.6

Board of Management (BoM)

The Board of Management (BoM) of ANGRAU acts as the apex body responsible for making policy decisions. The BoM consists of 21 members nominated from various categories. The Vice-Chancellor is an ex-officio member and serves as the Chairman of the BoM. The Registrar serves as the Secretary to the BoM. The term of office for the BoM members, excluding ex-officio members, is three years.

The BoM includes Secretaries to the Government from the Departments of Panchayat Raj and Finance; Directors of the State Departments of Agriculture and Animal Husbandry as ex-officio members. Other members of the BoM include representatives from the State Legislature and Parliament (4); representatives from the agro-industry (2); the State Chamber of Panchayat Raj (1); a distinguished agricultural scientist (1); an ICAR representative (1); members of the Academic Council of ANGRAU (3); and progressive agriculturalists (4).

Academic Council and Faculty Boards

On the academic front, the University comprises three Faculties: Agriculture, Agricultural Engineering & Technology, and Community Science.

The Academic Council and Faculty Boards hold authority for the implementation and monitoring of all academic programs.

The Honorable Vice-Chancellor serves as the Chief Executive, while the Registrar acts as the Ex-officio Secretary of the Academic Council. The Faculty Deans serve as Chairpersons of their

respective Faculty Boards, with the Joint Registrar acting as the Secretary. The Academic Council includes representatives from other Universities, representatives from the Board of Management (BoM), the Commissioner & Director of Agriculture, Government of Andhra Pradesh, Deans, Directors, Controller of Examinations, Co-opted members, Associate Deans, University Heads of Departments, Professors, Special Invitees, and other nominated members.

The members of the Faculty Board of Agriculture consist of Deans, Directors, and the Controller of Examinations, Associate Deans, Professors, University Heads of Agriculture faculty, HoDs of Agriculture departments and other nominated members.

The Faculty Board of Agricultural Engineering and Technology includes Deans, Directors, the Controller of Examinations, Associate Deans of the faculty of AE&T, Professors, University Heads, HoDs of Agricultural Engineering and Technology departments and other nominated members.

The Faculty Board of Community Science comprises Deans, Directors, the Controller of Examinations, Associate Dean of the College of Community Science, Professors, University Heads, HoDs of Community Science departments and other nominated members.

The Faculty Board of Post Graduate Studies includes University Heads of all faculties, Heads of Departments in Colleges offering PG courses, Associate Deans of the Colleges, Heads of Departments offering minor courses to postgraduate students located at Agricultural College, Naira / Mahanandi, two eminent scientists from outside the University invited by the Dean of Post Graduate Studies, three representatives from each faculty nominated by the Vice-Chancellor, and Officers-in-charge of PG Academic activities in the Colleges.

Research and Extension Advisory Council (REAC)

The responsibilities of overseeing research and extension activities lie with the Director of Experimental Stations and the Director of Extension, respectively. The Research and Extension Advisory Council (REAC) serves as the University's apex body, tasked with evaluating the previous year's research



and extension achievements and providing guidance for future strategies. Chaired by the Hon'ble Vice-Chancellor, the REAC comprises the Director of Experimental Stations as the Convener and Secretary, along with the Director of Extension, Associate Directors of Research, innovative farmers, representatives from Agri Business Consortium, three delegates from KVKs operated by NGOs, Special Invitees, Eminent Scientists of Agriculture, Farmer Representatives, Women Farmers, Deans of Faculties, Principal Scientists of Crops, University Heads, Coordinators of DAATTCs, and Programme Coordinators of KVKs.

General Administration

The Vice-Chancellor serves as the Chief Executive and oversees the University administration. They are supported by the Registrar, who manages general administration, and by the Comptroller, who oversees financial management.

In terms of academic administration, the Vice-Chancellor receives guidance from the Academic Council and Faculty Boards. Similarly, the Research and Extension Advisory Council provides direction for research and extension activities.

The teaching programs within the faculties of Agriculture, Agricultural Engineering & Technology, Community Science, and Post Graduate Studies are overseen by their respective

Deans. The Associate Deans serve as both academic and administrative heads of the Colleges, reporting to the Dean. Additionally, the Dean of Student Affairs is responsible for student welfare and activities.

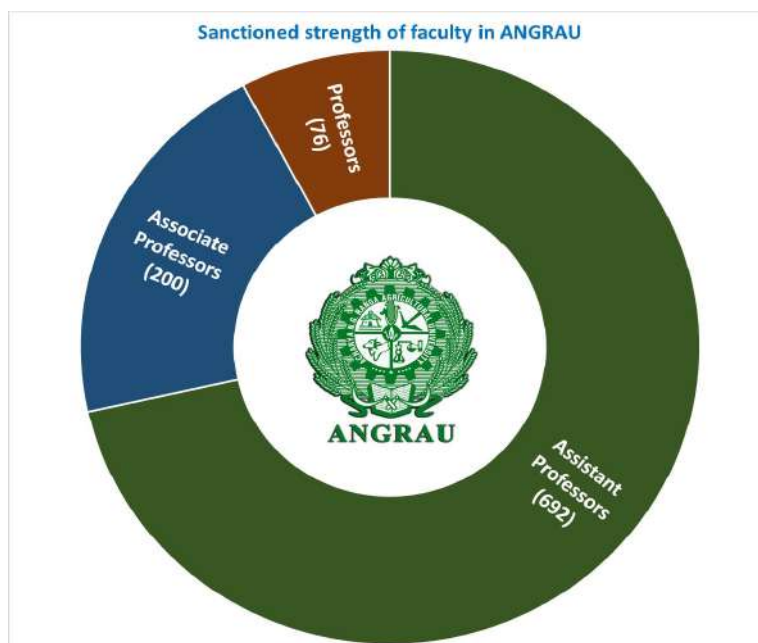
Research activities across all faculties are managed by the Director of Research. Associate Directors of Research are tasked with planning and implementing research and extension activities within their designated agro-climatic zones. The Heads of research stations, reporting to their respective zonal Associate Directors of Research, lead individual research stations within that agro-climatic zone.

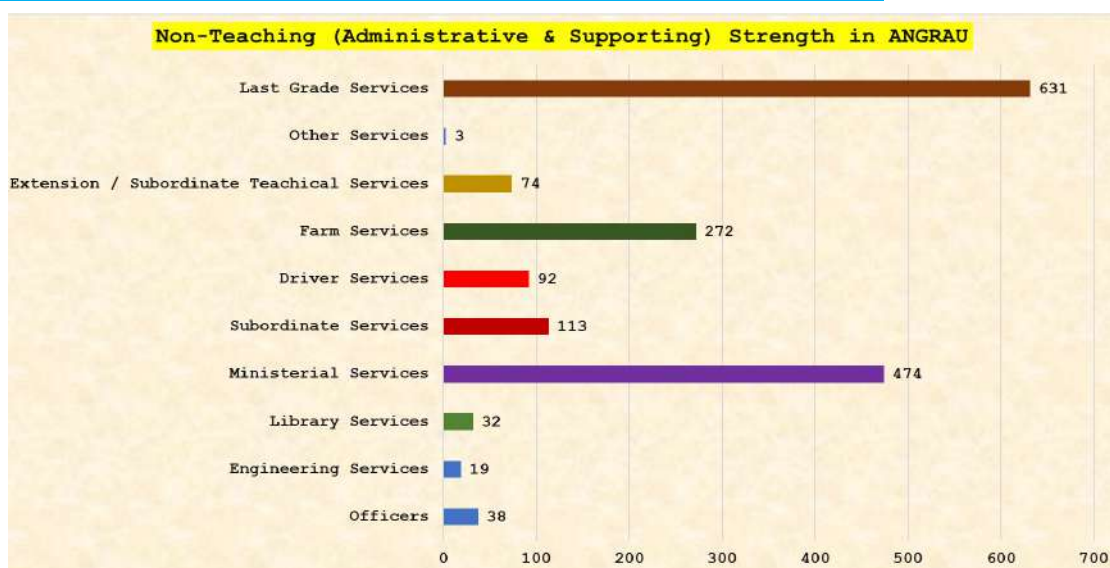
The Director of Extension heads the University Extension wing, overseeing entities such as Krishi Vigyan Kendras, DAATTCs, ATIC, Electronic Media, and AI&CC.

The Engineering Division is headed by the Estate Officer, who is responsible for the construction and maintenance of civil works within the University.

PERSONNEL & CADRE STRENGTH

The cadre-wise sanctioned strength of teaching and non-teaching staff at ANGRAU, as of June 12, 2024, across three wings — teaching, research, extension, and administration is provided in the graphs below. University has sanction strength of 968 scientific staff and 1748 administrative and supporting





staff due to which the University is spearheading in all fronts in the service of human kind.

FINANCIAL PROFILE

The University receives major financial grants from the Andhra Pradesh State Government through both Plan and Non-Plan Schemes. Non-Plan assistance is provided in the form of Block Grants to sustain the University's operations. Additionally, substantial support is provided by ICAR and the Government of India through various schemes.

MOST SIGNIFICANT NATIONAL AWARDS

- Dr. M V Rao, Vice Chancellor, received Norman E Borlaug Award in 1991 & India's fourth highest civilian award, Padma Sri, in 1999.
- Dr. I V Subba Rao, Vice Chancellor, received India's fourth highest civilian award, Padma Sri, in 2002, Norman E Borlaug Award in 2004 and Ashutosh Mukherjee Memorial Award in 2007.
- ICAR Best Institute Award for 1999.
- Sardar Patel Outstanding ICAR Institutional Award in 2007.
- National Youth Parliament Awards 1999-2000 & 2002-03.
- ICAR Excellent Performance JRF Award (first place) for 1999-2000.
- ICAR JRF Award (Second Place) for 2004.
- ICAR JRF Award (first place) for 2011.
- ICAR JRF Award (first place) for 2018.
- ICAR PG Scholarship Award (first place) for 2019 for securing highest ICAR-PG Scholarships under the category of Agricultural Sciences in AIEEA-PG-2018.
- ICAR PG Scholarship Award (second place) for 2020, for securing second highest ICAR-PG Scholarships under the category of Agricultural Sciences in AIEEA-PG-2019.
- ICAR PG Scholarship Award (second place) for 2021, for securing second highest ICAR-PG Scholarships under the category of Agricultural Sciences in AIEEA-PG-2020.
- ICAR PG Scholarship Award (first place) for 2022, for securing highest ICAR-PG Scholarships under the category of Agricultural Sciences in AIEEA-PG-2021.
- ICAR PG Scholarship Award (first place) for 2022, for securing highest ICAR-PG Scholarships under the category of Engineering and Technology in AIEEA-PG-2021.
- ARS, Vizianagaram won ICAR Award - Fakhruddin Ali Ahmed Award for Outstanding Research in Tribal Farming Systems for the year 2020.
- ARS, Anantapuramu, won ICAR Vasant Rao Naik Award for 2004, 2015 and 2017 for promoting outstanding research and application in priority aspects of dry land farming systems & water conservation.

PATENTS LIST

Year of grant	Name of Machinery/ Process Technology/Technology	Patent No / Publication Date
2007	Process of Pneumatic Pressure Paddy Parboiling	210736
2018	Applications of nanoscale ZnO in peanut crop	304588
2021	Machinery and Process of Manufacturing of cane jaggery in crystal form	361025
2021	Process for preparing dehydrated fruit bar from prickly pear fruits (<i>Opuntia ficus indica</i>)	367043
2021	Mechanized jaggery granulator for preparing jaggery granules	382165
2022	Production of alcohol (Naturohol) from <i>Agave albomarginata</i>	395370
2022	Mechanized system for preparing paper sweet (pootharekulu) films	406007
2022	A process for manufacturing of blended fruit squash with prickly pear (<i>Opuntia ficus indica</i> & <i>Opuntia dillenii</i>) fruit juice and lemon juice	411468
2024	Chilli compaction-cum-bagging unit	170165
2024	An <i>in vitro</i> method for determination of glycemic index and kit there off	536180
2024	A method for preparing Nano bio char and its application	537907
2025	Diabetic Smart Rice Cooker	403517





EDUCATION



HISTORY:

In 1964, under the provisions of the Andhra Pradesh Agricultural University Act of 1963, a significant restructuring took place in the educational landscape of the region. Prior to this act, the Colleges of Agriculture and Veterinary Science were affiliated with various universities. The College of Agriculture and Veterinary Science in Hyderabad had its affiliation with Osmania University, while the Agricultural College in Bapatla was affiliated with Andhra University. Similarly, the Sri Venkateswara Agricultural College and the Andhra Veterinary College in Tirupati were affiliated with Sri Venkateswara University.

With the establishment the Andhra Pradesh Agricultural University, these institutions underwent a crucial transformation. By June 1964, they were transferred from their respective affiliations to join the newly formed Andhra Pradesh Agricultural University. This reorganization aimed to consolidate and enhance the focus on agricultural education and veterinary sciences under a unified administrative framework. It marked a significant milestone in the development of agricultural education in the state, centralizing resources and expertise to better serve the needs of agriculture and veterinary science in Andhra Pradesh.

Growth of Educational Institutions during 1964-2004:

The three campuses of the University at the time of its establishment in 1964 have grown into eight and the number of constituent colleges has increased from 6 to 14 by 2004.

1. Agricultural College, Bapatla (1945)
2. College of Veterinary Science, Rajendranagar (1946)
3. College of Veterinary Science, Tirupati (1955) (The Andhra Veterinary College was started in 1955 at Bapatla under administrative control of Department of Animal Husbandry under affiliation to Andhra University, then shifted to Tirupati in 1957, brought under APAU in 1964)
4. Agricultural College, Rajendranagar (1961)
5. SV Agricultural College, Tirupati (1961)
6. College of Home Science (1964) (Transformation of College of Domestic Science of Department of Technical Education, A.P. into College of Home Science) Andhra Pradesh Agricultural University (APAU)
7. College of Home Science, Bapatla (1983-1999)
8. College of Agricultural Engineering, Bapatla (1983) (Started at Agricultural College campus, later shifted to separate campus in 1994)
9. Agricultural College, Aswaraopet (1989)
10. Agricultural College, Naira (1989)
11. Agricultural College, Mahanandi (1991)
12. College of Fisheries Science, Muthukur (1991)
13. College of Veterinary Science, Gannavaram (1997)
14. College of Food Science & Technology, Bapatla (2003)



Agricultural College, Bapatla (Bsd, 1945)



Besides these, 17 Agricultural and Veterinary Polytechnics have been established at various locations in the State.

The University (APAU) was renamed as Acharya N.G. Ranga Agricultural University (ANGRAU) on November 7, 1996.

Bifurcation of University after 2004:

Bifurcating ANGRAU in 2005, Sri Venkateswara Veterinary University (SVVU) was established by Act 18 of 2005 and in 2007, Andhra Pradesh Horticultural University (APHU) was established by the Act 30 of 2007, thus all teaching & research institutions of veterinary and horticulture have been shifted from ANGRAU to SVVU and APHU.

Growth of Educational Institutions during 2004-2014:

In 2008, Agricultural Colleges at Rajamundry and Jagtial, College of Agricultural Engineering at Madakasira and College of Food Science & Technology at Pulivendula were started, expanding the network of educational institutions under ANGRAU. Later, College of Agricultural Engineering was established at Sangareddy in 2011. The College of Home Science is shifted to Guntur in 2013.

Bifurcation of state in 2014 and developments:

Consequent to bifurcation of Andhra Pradesh State as per the Andhra Pradesh Reorganization Act 2014, into two states of residual Andhra Pradesh and Telangana on the 2nd of June 2014, the ANGRAU has been bifurcated 'on order to serve basis' into the Acharya N G Ranga Agricultural University for the State of the Residual Andhra Pradesh, with Head Quarters at Lam, Guntur.

The professional educational institutions are located in all the Agro-Climatic Zones of the state empowering the youth with skill based Agricultural & allied education with experiential learning in the following colleges.

1. Agricultural College, Bapatla (1945)
2. SV Agricultural College, Tirupati (1961)
3. College of Home Science, Bapatla (1983-1999) Reinitiated at Guntur (2013), Rechristened as college of Community

Science (2016)

4. Dr. NTR College of Agricultural Engineering, Bapatla (1983) (renamed in 2018)
5. Agricultural College, Naira (1989)
6. Agricultural College, Mahanandi (1991)
7. Dr. NTR College of Food Science & Technology, Bapatla (2003) (renamed in 2018)
8. Agricultural College, Rajamahendravaramu (2008)
9. College of Agricultural Engineering, Madakasira (2008)
10. College of Food Science & Technology, Pulivendula (2008)
11. Advanced Post Graduate Centre (2015)
12. Sri Mekapati Goutham Reddy Agricultural College, Udayagiri (2022)
13. Agricultural College, Pulivendula (2023)

MOST SIGNIFICANT INITIATIVES IN AGRICULTURAL EDUCATION:

Introduced Participatory Experiential Learning Curriculum way back in 1979:

"Education is not the learning of facts, but the training of the minds to think". Learning experience outside the classroom leads to high level of motivation, understanding, analytical attitude, improved academic performance and most importantly get closer to nature and realities.

University focus more on training students through Experiential and Participatory approaches to recognize, realize and understand



16th July 1945: Sir S V Ramamurthy ICS, Inaugurated Agricultural College, Bapatla, in the presence of Sri. P. V. Krishnayya Choudary-District Board President, Dr. BV Nath-Director of Agriculture, Madras, Sri. S. Patrudu and others, in the Board High School, Bapatla.



the Science of Agriculture to see the change in students for better India. In this direction, ANGRAU introduced Rural Agricultural Work Experience Program (RAWEP) – an experiential learning from farmers' fields with 6 months apprenticeship in villages, for the first time in India from 1979-80 for UG students.

The RAWEP Programme was later implemented by ICAR in all State Agricultural Universities as per the recommendation of Randhawa Committee (1992). This concept was later adopted by all Agricultural Universities in India. Consequently, the ICAR had designed "Student READY" program which is being implemented by all State and Central Agricultural Universities as mandatory for the final year students of all professional degrees in agriculture, and allied sciences under ICAR. The program makes the students to understand the rural life, acquaint with socio-economic conditions of farmers, train while learn the farmer practices, develop skills in communication, develop competency and confidence in addressing the farmer issues.

ANGRAU implemented Student READY (Rural Entrepreneurship Awareness Development Yojana) programme, a new initiative of ICAR to reorient graduates of Agriculture and allied subjects for ensuring and assuring employability and develop entrepreneurs for emerging knowledge intensive agriculture.

Five components i.e. Experiential Learning, Rural Awareness Works Experience, In-Plant Training / Industrial attachment, Hands-on training (HOT) / Skill development training and Students Projects are part of the programme. All these components are interactive and are conceptualized for building skills in project development and execution, decision-making, individual and team coordination, approach to problem solving, accounting, quality control,

marketing and resolving conflicts, etc. with end to end approach.

The curriculum includes visits by students to various research stations, institutions, universities, agri-industries, and farms within and outside the state. These visits give students the chance to interact with experts in a range of agricultural and allied sciences and gain a better understanding of Indian culture and agriculture.

Introduced Post matriculate Diploma in Agricultural Sciences in 1989

University is the first in India to introduce induction courses for high school students on science of Agriculture through Agricultural Polytechnics located in research stations to impart skill development in youth on agriculture and allied sciences, through two-year Diploma in Agriculture, Organic Farming and Seed Technology and three-year diploma in Agricultural Engineering. University has made significant impact in developing interest in the field of Agriculture and allied sciences among SSC (10th Standard) passed students through Agricultural Polytechnic Colleges spread over across the state.

Acharya N G Ranga Agricultural University has established the first ever Agricultural Polytechnic in the state at Regional Agricultural Research Station, Palem during the year 1989 offering a post matriculate diploma in Agriculture with an objective to train the rural youth as gross root level workers catering to the needs of the agriculture and allied sectors. Seed Technology and Agricultural Engineering Polytechnics were also established by the University throughout the State keeping in view the demand for skilled man power in seed and Agro-based industries. The 2-year diploma course in Organic Farming was introduced by the University from academic





year 2016-17 onwards due to more emphasis given by the Government on organic agriculture, besides provides greater employment opportunity in this field.

At present, the University has 21 constituent polytechnics and 60 affiliated polytechnics offering various diploma courses. The duration for the diploma in Agriculture, Seed Technology and Organic farming is two years (four semesters), while the duration for diploma in Agricultural Engineering is three years (six semesters) and the medium of instruction is English for all the diploma courses.

Evolution of Curriculum / Syllabus revisions as per ICAR:

Development of curricula is an on-going process, with the ICAR (Indian Council of Agricultural Research) tirelessly working to implement necessary changes to ensure the quality of agricultural education. Regularly convening drafting committees, the ICAR collaborates with all relevant stakeholders to revise and restructure postgraduate and doctoral syllabi. This collaborative effort aims to address emerging challenges and capitalize on opportunities across various agricultural and related sciences fields. Consequently, Universities implement and revise their curricula based on ICAR recommendations

In the frequent changing scenario and current demands of Higher Agricultural Education system of the country, periodic exercise has been conducted by ICAR to address the issues on agricultural education including revision of courses and curricula in Agriculture and allied sciences. In pursuance of this goal, ICAR from time-to-time constituted Deans' Committee consisting of Senior faculty members representing diverse disciplines. The first Deans' Committee, established by the Indian Council of Agricultural Research (ICAR) in 1966, was a landmark initiative aimed at standardizing and improving the agricultural education curriculum across India. The First Dean's Committee developed detailed guidelines for undergraduate and post-graduate education in 1965. This was progressed further by the Second Dean's Committee in 1981. The Third Dean's Committee (1995) recommended new curricula for the undergraduate courses. The aim was to produce agricultural graduates with a strong background in modern science,

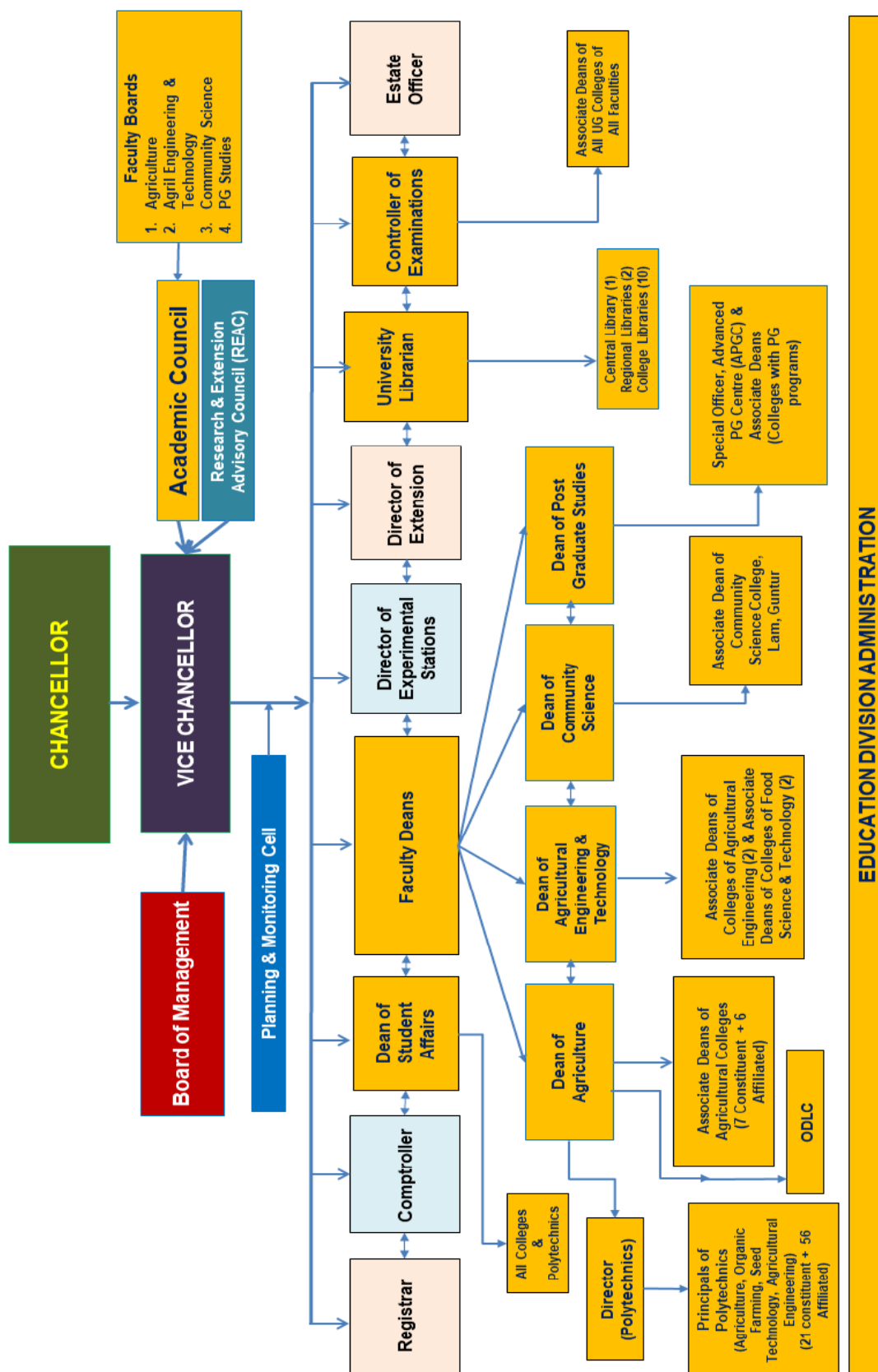
biology of pests, principles and techniques of IPM and macro/micro-economics pertaining to pest management, so as to assure greater sustainability in agricultural production and to protect the environment. Further, Fourth Deans Committee (2005); Fifth Deans' Committee (2013) and sixth Deans Committee (2021) were constituted with mandate to restructure UG programmes of Agricultural Universities incorporating entrepreneurship for students. The aim of the sixth Deans committee was to produce graduates who were not only knowledgeable and skilled but also capable of addressing contemporary agricultural challenges and contributing to the overall development and modernization of the agricultural sector in India. ANGRAU changed the curriculum time-to-time and follow the syllabus of various courses as per the recommendations of ICAR Deans Committee.

ANGRAU implemented ICAR- VI Deans Committee curriculum in line with NEP-2020 from Academic Year 2024-25

To facilitate PG curriculum / syllabus revisions, the ICAR has established National Core Groups and BSMA Committees dedicated to the revision and restructuring of syllabi. Recognizing the need for a paradigm shift, these bodies work to align academic regulations with the provisions of the National Education Policy-2020. It's encouraging to note that these Committees have adopted a flexible, multi-disciplinary, and holistic approach in developing the syllabus and academic regulations. The curriculum has been thoughtfully updated to equip students with the necessary tools for learning, enhancing employability and skill sets, fostering entrepreneurship, and preparing them for global competitiveness. This comprehensive approach ensures that the education system evolves to meet contemporary demands and future challenges in the agricultural sector.

Unique Student Advisory System:

The university has implemented a special advisory system for mentoring and guiding UG students, with one faculty advisor for every 30 students, dedicated to leading weekly advisory classes where they can interact and talk with students one-on-one to motivate them, and also holding once-a-semester student-parent-teacher



sessions for feedback. The advisers serve as the students on-campus counsellors and guardians.

Skill development & Capacity Building

The ICAR National Agricultural Higher Education Project has sanctioned Institutional Development Plan (IDP) ANGRAU during FY 2018-19, towards capacity building, infrastructure development and governance reforms leading to greater autonomy and sustained accreditation of the University.

The IDP has facilitated student international programs for 140 UG students at Kansas State University, USA; Oklahoma State University, USA; International Center for Biosaline Agriculture (ICBA), Dubai; Mahidol University, Thailand; Queen Sirikit Botanic Garden, Chiang Mai, Thailand; Tampere University, Finland; University of Massachusetts, Amherst, USA; Universiti Malaysia Kelantan, Malaysia; World Vegetable Center, Taiwan; Bangladesh Agricultural University, Bangladesh during the period 2018-2023, in which UG students have

training for UG students, the University has conducted 81 programmes including entrepreneurship programmes, soft skills and skill development programmes at national level in collaboration with reputed institutions, resulting in 9724 student beneficiaries across the colleges during the period 2018-2023.

The project provided best opportunities to students facilitating long lasting benefits through programs focusing on improving non-academic soft skills of the students.

The IDP played a key role in the creation of central instrumentation facilities at different colleges for better teaching, learning, and research experiences for faculty and undergraduate and post graduate students, leading to overall excellence in academics and research at the University. All the activities including infrastructure development, skill-based programmes, overseas training to students and faculty created a difference and magnificence in the lives of the beneficiaries.

Under IDP, 24 faculty participated in



attended skill development & capacity building programs at overseas institutions.

The IDP in collaboration with reputable national training institutions, worked fiercely to improve the skills of the students through personality development programs on college campuses, english and foreign language classes, entrepreneurship programs, and skill development programs on cutting-edge technologies like drones, blockchain, IoT, robotics and artificial intelligence. In addition to overseas & inland



international trainings for a period of two weeks to two months at reputed foreign academic/ research institutions and gained exposure to new technologies, possibilities of future research collaboration and most importantly a holistic ecosystem of up skilling.

Affiliated Colleges:

In view of the massive and diverse nature of the system of human capital utilization in agriculture, there is a great demand for agricultural graduates.



Government of AP aiming to build up dynamic and skill-oriented manpower having knowledge on agricultural science, permitted private colleges fulfilling standard requirements, affiliated to ANGRAU from AY 2016-17. Presently, six agricultural colleges with UG courses are under the affiliation with ANGRAU.

ACCREDITATION

ICAR accreditation is done to ensure the quality of higher agricultural education in Agricultural Universities and its constituent colleges. The University/institution/programme are critically evaluated by a group of experts as per approved guidelines of the Council. The National Agricultural Education Accreditation Board (NAEAB) undertakes the accreditation programme to assist people, prospective students, educational institutions, professional societies, government and other concerned agencies in identifying institutions and programmes which meet the minimum norms and standards as prescribed by the Council, to provide guidance for the improvement of existing agricultural education institutions/programmes, and to develop new institutions/programmes. In order to infuse better accountability and intense monitoring for educational quality improvement in Agricultural Universities, the Government of India has taken a decision to link accreditation of agricultural universities by NAEAB with the Grant-in- Aid from ICAR, New Delhi. Accreditation of Agricultural Universities is a continuous process, and since the constitution of the Board in 1996, ANGRAU has been accredited continuously for all the programs, colleges and University. The Peer Review Team of ICAR-NAEAB visited the University and colleges in 2021, and all the programs, colleges and University is accredited for a period of 5 years, till March 26, 2026.

GENERATING SKILLED HUMAN RESOURCE

After establishment of the University (ANGRAU) in 1964, so far 56 convocations were conducted for awarding degrees to undergraduates across different faculties.

During the last six decades from 1964 to 2024, a total number of 35,245 students were graduated from ANGRAU across the faculties viz., Agriculture, Veterinary, Fisheries,

Dairying, Horticulture, Agril. Engineering, Food Technology and Community Science.

Out of total number of 38,052 students graduated, 25,475 students graduated from B.Sc. (Hons.) Agriculture, 4,822 from B.V.Sc. & A.H., 3,241 from B.Sc. (Hons.) Community Science, 1,883 from B.Tech. (Agril. Engg.) and the remaining from B.F.Sc, B.Tech. (Dairying), B.Sc.(CA & BM), B.Sc. (Horticulture) and B.Tech. (Food Technology), where as 13,231 degrees was awarded to UG students after bifurcation of State (2015).

The professionals from ANGRAU are known for their knowledge, skill, as well as their hard work, and are successful in their chosen places of work all over the world.

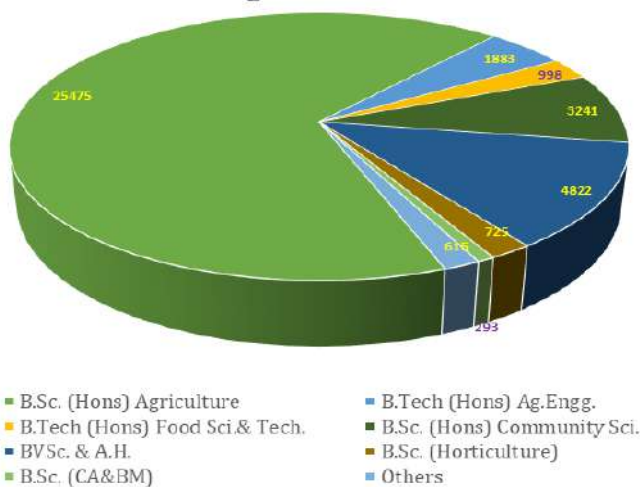
POST GRADUATE EDUCATION – PIONEERING GROWTH & INNOVATION

At the time of establishment in 1964, only under graduate programmes were offered in all the teaching campuses, and PG programme being offered only at the Agricultural College, Rajendranagar. APAU embarked on postgraduate education in 1964-65 following recommendations by a high-level commission led by Dr. B. P. Paul, Director General of ICAR. This marked a significant leap in agricultural education, establishing ANGRAU as a pioneer in the field.

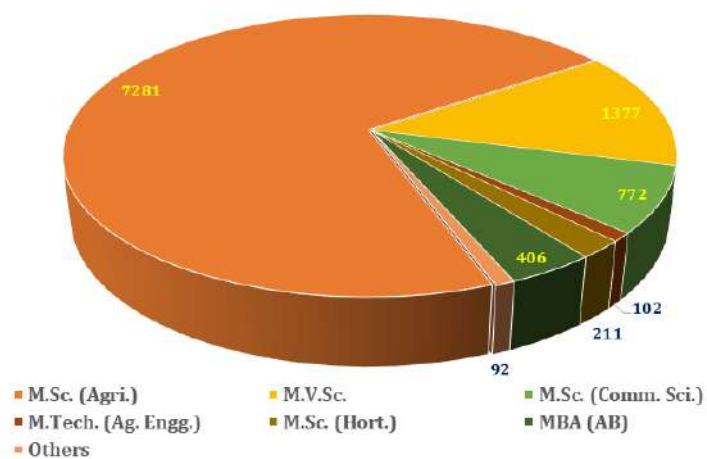
Over a period of time, post-graduate programmes were introduced (1964-Masters; 1968-Doctoral) in the Agricultural Colleges located at Bapatla and Tirupati and later in Home Science College, Hyderabad (1968-Masters; 1978-Doctoral). In the faculty of Agricultural Engineering and Technology, Masters (2006) and Doctoral (2012) programs introduced at Dr. NTR College of Agricultural Engineering, Bapatla.

A post-graduate programme leading to Master of Agriculture Business Management was started in 1998 at Rajendranagar campus, and later at Tirupati (2008) establishing Institute of Agri Business Management in SV Agricultural College. Inter faculty PG programmes like M.Sc. (Food Science and Technology), M.Sc. (Ag. Biotechnology), M.V.Sc. (Vet. Biotechnology) were started in 2001 and M.Sc. (Environmental Science and Technology) in 2003. During 2006, Masters programs in the faculty of Agricultural

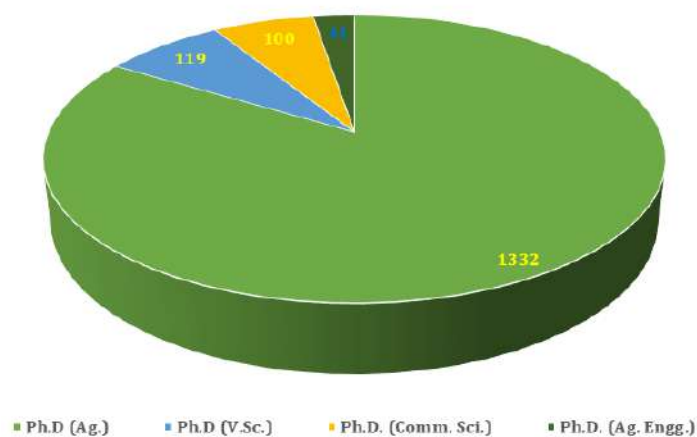
Course-wise: Number of students graduated during since 1964



Course-wise: Number of students successfully obtained Masters Degree since 1964



Course-wise: Number of students successfully obtained Doctor of Philosophy since 1968





Engineering & Technology was started at Bapatla.

M. Sc. (Ag.) Programmes in Acharya N.G. Ranga Agricultural University (ANGRAU) has significantly expanded, particularly with the inclusion of second-generation colleges. Since 2010, the Agricultural College, Naira and Agricultural College, Mahanandi have been offering this program, further broadening the reach and impact of ANGRAU's agricultural education.

These colleges serve as vibrant centres of academic excellence, driving innovation and sustainable practices in agriculture. They significantly contribute to ANGRAU's mission of advancing agricultural education, research, and outreach for the betterment of society and the agricultural sector at large.

Advanced Post Graduate Centre (APGC) at Lam, Guntur initiated on August 5, 2015 vide G.O. M.S. No.4 dated 04-01-2016 of the Department of Agriculture and Co-operation, Govt. of Andhra Pradesh. The post graduate degree programs in APGC in Agronomy (Water Management), Environmental Sciences, Microbiology, Seed Science & Technology started from AY 2015-16 whereas Molecular Biology and Biotechnology started from AY 2016-17. The post-graduate degree programs in faculty of home science in Apparel & Textiles, Family Resource Management, Foods and Nutrition, Human Development and Family Studies and Home Science Extension & Communication Management started from AY 2016-17.

The Ph.D. degree programs under Faculty of Agriculture in Agricultural Microbiology started in AY 2015-16 and Molecular Biology & Biotechnology started in AY 2016-17. The Ph.D. degree programs under Faculty of Home Science in Apparels & Textiles, Human Development & Family Studies started from AY 2016-17.

The following reforms were brought into the system for improvement of PG research across all faculties.

- Implementation of revised PG guidelines in 2016
- Revised thesis presentation guidelines in 2018
- Introduction of anti-plagiarism policy 2019

- Increase of stipends for PG students from 2019
- Annual publication of PG research highlights from 2015
- Common comprehensive exam paper for all Colleges from 2019
- Consideration of ICAR- AIEEA/AICE marks for PG admissions from 2019
- Organizing Annual National Conference for PG Students from 2019
- Coaching cell for JRF/SRF/ARS competitions
- Scholarships for merit students in collaboration with private organizations
- Discipline-specific SLTP discussions to enhance PG Research Quality
- Establishment of Central Instrumentation Cells in all PG colleges
- Initiation of M. Tech Programmes in Food Process Technology
- Requirement for Doctoral students to publish an article before submitting their thesis
- Introduction of NRI/ in lieu of NRI seats in M.Sc. and Ph.D. programs
- Accreditation of all PG programs in all colleges
- Regular updation of curriculum based on ICAR recommendations

Significant achievements through PG research include, development of BPT-5204 (Samba Mashuri) a popular rice variety through PG research, numerous Jawaharlal Nehru Awards for outstanding Doctoral Thesis Research, multiple ICAR-JRF Awards for PG scholarships.

Through PG programs, ANGRAU generated well trained and adequately skilled human resources to the tune of 10,241 Masters Degrees (7281 M.Sc. (Ag.); 1377 M.V.Sc; 772 M.Sc (Community Science); 406 MBA (ABM); 211 M.Sc. (Hort.); 102 M.Tech. (Ag.Engg.); 78 M.Sc. (FST); 11 M.Sc. (Dairy Science) till 2022. A total of 1449 scholars (1332 Ph.D. (Agri.); 119 Ph.D. (Vety.); 100 Ph.D. (Community Science); 41 Ph.D. (Agril. Engg.) successfully completed Ph.D. by the end of 2025.

STUDENT DEVELOPMENT & WELFARE:

ANGRAU established strong policies for students' development & welfare in all the campuses, including sports & games, amenities in hostels, health care, nutrient & safe food in hostels, promotion of social activities such as NSS, character building through NCC, capacity building trainings, language labs, encourage to participate in seminars / symposia / conferences, in addition to SC/ST welfare, Women Protection Cell, and Anti-Ragging Committees. The unique "*student advisory system*" is being implemented in the University.

Co-Curricular activities:

ANGRAU gives emphasis to the co-curricular activities of the students along with the curricular activities. University built sports and games infrastructural facilities created in all campuses as it plays a very vital role in inculcating a culture of sports in young students, displaying tenacity and persistence of the human spirit. Taking into consideration of sports, an important enabler for sustainable development: as identified by United Nations, and to build the self-confidence, self-esteem, discipline, managing emotions, team spirit, leadership, perseverance, patience and social skills among students of ANGRAU, dedicated sports activity under the guidance and training of skilled professional is scheduled as a part of the curriculum.

- As a part of routine calendar events, college level and University Inter-Collegiate

competitions are conducted every year, to promote friendship, fellowship and social responsibility.

- Regular training programs are being organized to improve skills and motivate the students to participate in various sports, games, literary and cultural events at state and national levels.
- All campuses are having ample space for open sports and games, while the major campuses are strengthened with in-door sports complex.
- Open Gyms near hostels, both for boys and girls, are available in all colleges for promoting good physical and mental health among students.
- The students of ANGRAU are supported to take active part in all national and state level programs.

Community Activities:

- ANGRAU promotes and encourage the students to take active part in various activities for community and society building through "shramadaan".
- NSS is compulsory for all students, and the students in all campuses actively take part in NSS programs which provide opportunity in understanding the community, themselves in relation to community, identify the needs and problems, develop social responsibility, gain skills in leadership development, practice national integration to inculcate the theme of "Not me, but You" reflecting





democratic living and upholding the need for selfless service. The students will undergo special 10 days NSS camp every year in a village in addition to routine programmes, where the NSS volunteers will study the structure of the community and their needs, and accordingly make plans and execute for making rural connect and building confidence.

- 26 NSS units are actively involving in the NSS activities under the guidance of NSS Programme Officers in the colleges
- ANGRAU students design and implement concepts such as Agricos Carnival, Ideas Engines, I support, Clubs, Forums etc. in various campuses for regular group discussions and rationale thinking for the betterment of society.
- University established NCC Units in major campuses for developing character, comradeship, discipline and secular outlook among the students of the University.
- Kisan Melas will be organized by the students, in addition to conduct of special meetings with crop scientists of the area of study.
- Students of the colleges of ANGRAU are rendering their services through participation in community development programs, emergency services, natural disaster management, preparing educational videos etc.
- “Agricos Green Program” is another unique initiative of ANGRAU to promote the environmental awareness and participation in various programs to promote environmental health.

Placement Cells:

- Campus Placement Cells (CPCs) are established in all campuses, with strong linkages with all stake holders, conduct capacity building trainings in improving soft skills and leadership qualities.

Special Coaching Centres (SCCs):

- All campuses have Special Coaching Centres (SCCs) to help students get ready for PG admissions and other competitive tests.
- The students of ANGRAU have excelled

in ICAR JRF, SRF and other national level examinations. The University has bagged ICAR awards during 2021 for securing highest ICAR scholarships in India among SAUs in the category of Agricultural Sciences and Agricultural Engineering & Technology, and 2nd position in Agricultural Sciences during 2019 and 2020.

Health Centres:

- Integrated Health Centres (IHCs) are established in each campus with resident doctor, 24X7 ambulance, pharmacy, and conduct regular primary health check-ups and health awareness camps for students.

Hostels:

- University has separate hostels for boys and girls. A total of 21 Boys and 19 Girls hostels having capacity to accommodate 3220 students are available in the colleges of the University. Every effort has been made for happy, healthy and comfortable stay of the students in the hostels. The hostels are provided with all basic facilities, T.V room, reading room, water purifiers, indoor and outdoor games facilities, medical facilities, wifi facilities etc. The general management of the hostels is vested with the Chief Warden assisted by Warden and Additional Wardens.
- Hostels are covered by the CC Cameras and full-time security and vigil is maintained by the security persons. Adequate dining facilities are available for all the boarders. Messes are run on no-profit and no-loss basis by the students. All the messes run under the guidelines of Food Safety Standards Authority of India Act.

Scholarships:

- University / colleges guide the students for availing the scholarships / stipends from the state, central and sponsors for UG, PG and Ph.D. students.

LIBRARY & KNOWLEDGE CENTRES:

The libraries of the constituent Colleges caters to the needs of students and teachers, and in 1980,

the APAU Library system has been reorganized forming the Central Library at Rajendranagar and Regional Libraries at Tirupati and Bapatla. The University Library has a collection of over 81,000 books and subscribes to over 500 periodicals before bifurcation of the state i.e. June 2014. After bifurcation the State, the Acharya NG Ranga Agricultural University established the University Library at Lam Guntur in the year 2016. Presently, the ANGRAU Library System is having 13 Libraries in its fold including the University Library located at the Head-Quarters in Lam, Guntur. The main motto of the libraries is to accomplish the task of reaching to wider user community, comprising of teachers, scientists, extension specialists and students. The ANGRAU Libraries function under the overall supervision of the University Librarian. All the library e-Resources are being made available through remote access to various colleges, Research stations, Polytechnic colleges, DAATT centres and KVKs of ANGRAU for the benefit of Students, Scientists, Teachers and Research staff.

The University library system has facilities such as, access to a diverse collection, reference and research assistance, interlibrary loan services, digital resources and online access, institutional repository, empowered learning and research,

enhanced accessibility, books and periodicals, book bank scheme, reprographic services, reference section, newspaper section, competitive examination cell, digital repository etc. The University Library network also offers PGS-501 Library Service course, besides conducting regular sessions on orientation and awareness on e-resources.

The Knowledge Centres and libraries in various campuses have technology and network facilities such as Integrated Library Management Systems (ILMS), Library Automation with KOHA, RFID Technology and Open Access Initiatives, Digital Library Service and Resources / Online Resources.

Significant Initiatives:

- Theses belonging to various colleges of ANGRAU from 2014 to till date are being maintained under Institutional Repository and uploaded in the KrishiKosh Digital Repository under DKMA of ICAR.
- Library Management System (LMS) KOHA has been implemented in all colleges of ANGRAU and WEB-OPAC for Centralized server is established for the first time in University Library, Lam, Guntur.
- The University Library has completed digitization of rare Documents, Thesis,





Institutional repositories and other documents related to university is about 4.80 lakh pages.

- RFID Technology with security gates, bio-metric, work station, self-service kiosk is integrated with Library Management System (LMS) KOHA at Regional Library (Student Knowledge Centre), Agricultural College, Bapatla and S.V. Agricultural College, Tirupati
- The ANGRAU University Library has got CeRA Best Usage award by the ICAR for the years 2021 and 2022.

ALUMNI-ANGRAU

Acharya N G Ranga Agricultural University in its 60 years of fruitful journey has a big strength of Alumni and has a remarkable impact on the society at national and at the global level. Alumni is the backbone for any educational institution and so as with this university. It is the biggest strength for the development of this university, providing opportunities for the students on roll,

striving for farmers sustainability and finally helping in the overall development of the society.

Alumni in the current scenario are the brand building ambassadors for the University which means endowment of research facilities, helping with better corporate relations and spreading the message of the tremendous pace of development that ANGRAU is going through. In this context, the development of the alumni database for the university is the most important and immediate need which will be taken care of by the development of this alumni portal. Measures are taken to keep the alumni of ANGRAU remain intact and become active in getting registrations so that alumni database will be developed. A total of 1400 members have been registered in ANGRAU ALUMNI portal till date.

In addition to ANGRAU Alumni Network, all colleges have Alumni Associations. The University and Colleges work closely in association with Alumni in preparing the programs, strengthening the infrastructural facilities, building network for industrial trainings, and also placements.



ANGRAU
ALUMNI ASSOCIATION

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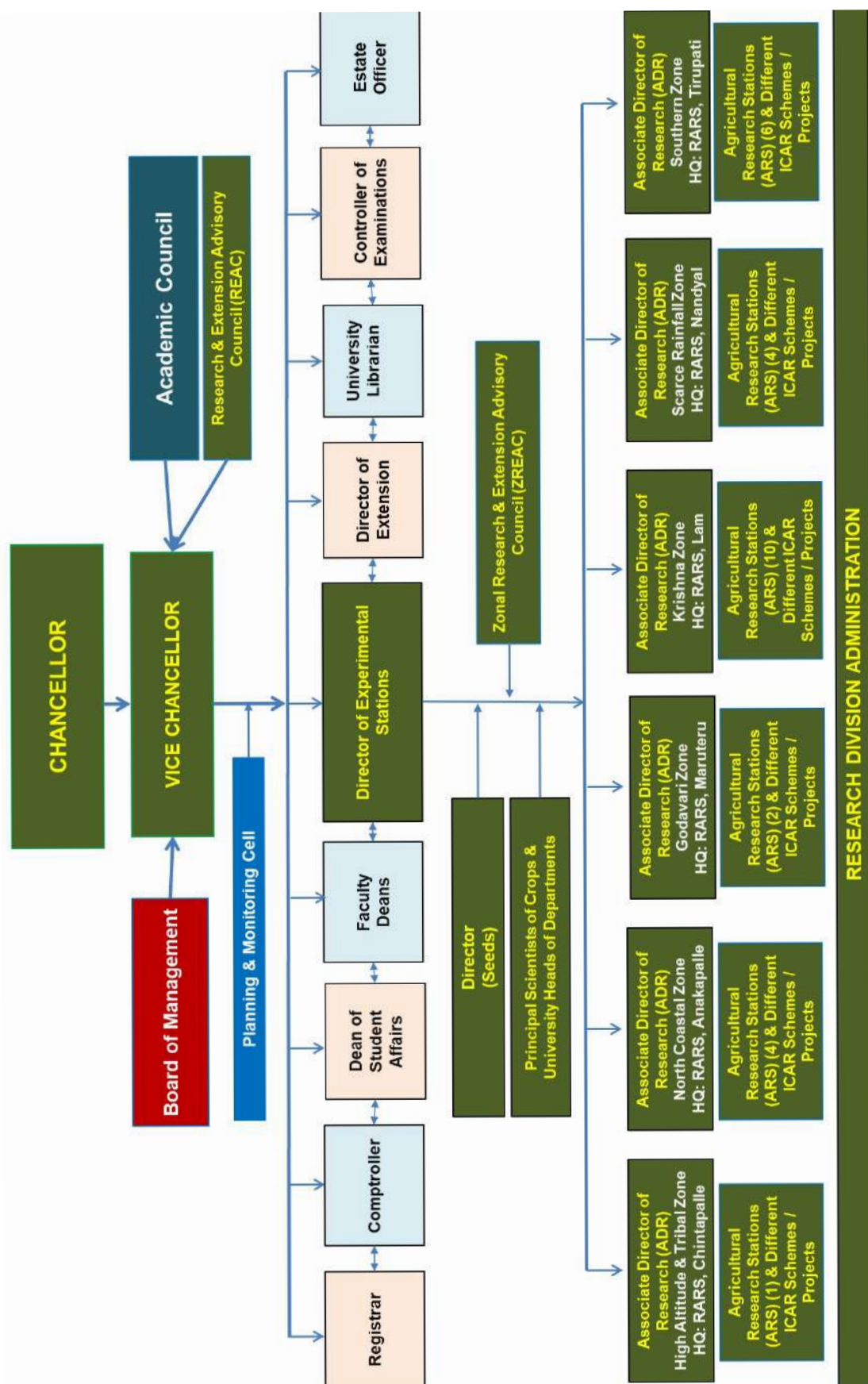
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RESEARCH





The research for innovations in crop management and production to address the contemporary challenges was initiated before independence at research stations in lam, nandyal, anakapalle, rudrur, and after the formation of APAU in 1964, 41 Agricultural Research Stations under the Department of Agriculture and four Research Stations under the Animal Husbandry Department were transferred to the university in July 1966 and May 1967, respectively. With the acquisition of 41 Agricultural Research Stations and four Veterinary Research Stations at its inception, the University has diversified its research activities to address ongoing agricultural issues. To achieve these objectives, the University established



several new research stations focusing on specific crops and local areas across the state. By 2004, the number of research stations had increased to 66, with over 250 additional research schemes. The implementation of the National Agricultural Research Project (NARP) in 1979 also helped develop the infrastructure for research programs. The number of research stations increased from 45 to 66 by 2004, alongside the growth of faculty, scientists, supporting, and administrative staff.

Presently, from 2015, after bifurcation of the state, ANGRAU research is being carried out in 33 research stations including six Regional Agricultural Research Stations, spread over 26 districts of Andhra Pradesh.

The research activities of the University are mainly focused on crop improvement, crop production, crop protection, post-harvest management, farm mechanization, rainfed research, water management, soil health management, socio economic aspects, farmer centric extension studies etc. aiming at overall increase in agricultural production and reducing cost of cultivation besides solving location

specific problems. In view of frequent occurrence of weather extremes such as droughts, floods and heat waves, the research efforts are intensified on millets and climate resilient agricultural production in the state.

Development of eco-friendly technologies for pest and disease management, addressing the biotic and abiotic stresses in crops through frontier technologies like biotechnology, nanotechnology and through other innovations are remarkable. Research is also being carried out in basic sciences of agriculture, as a support to applied research. On-farm research is also conducted for evaluation and refinement of newly developed technologies in farmers' field conditions.

The Research and Extension Advisory Council (REAC) is an apex body of the University to review the research and extension achievements of previous year and give directions to formulate strategies for the future research and extension activities under the Chairmanship of Hon'ble Vice-Chancellor.

CROP-WISE SALIENT RESEARCH CONTRIBUTIONS

RICE

Andhra Pradesh stands as one of the most significant rice-growing states in India. The newly formed state of Andhra Pradesh comprises 26 districts, with a current population of 496 lakhs, predicted to reach 591 lakhs by 2025, with a decadal growth rate of 9.21%. Rice cultivation in AP spans across 24.12 lakh hectares, yielding a production of 82.89 lakh tonnes of milled rice, with an average yield of 5.12 tonnes per hectare.

Acharya N.G. Ranga Agricultural University (ANGRAU), located in Guntur, Andhra Pradesh, has been steadfastly serving and meeting the needs of paddy farmers across the country and the state. Presently, rice research is conducted with a multi-disciplinary approach within the university, with the Regional Agricultural Research Station (RARS) at Maruteru leading in rice research. Other research stations dedicated to rice include Agricultural Research Stations (ARS) at Nellore, Bapatla, Ragolu, Machilipatnam, Jangamaheswarapuram, and Utukuru, along with the Regional Agricultural Research Station in Nandyal.



Rice Varieties developed and their Impact:

In the last 60 years, ANGRAU has developed 129 rice varieties, including two hybrids, released at the state and national levels. These varieties encompass 30 pure line selections from the pre-green revolution era, 91 high-yielding rice varieties, and two hybrids developed by different rice research stations located at Maruteru, Nellore, Bapatla, Ragolu, Nandyal, and Machilipatnam through crop improvement programs. ANGRAU also takes credit for the development and release of the first Brown Plant Hopper resistant variety, Vajram, in 1986 in the country. Additionally, it was the pioneer in developing and releasing rice hybrids in the country, namely, APHR-1 and APHR-2, in 1993.

Three prominent varieties, Swarna (MTU 7029), Samba Mahsuri (BPT 5204), and Cotton Dora Sannalu (MTU 1010), receive more than 100 quintals GOI breeder seed indent each year and are in high demand. These varieties also account for 60 percent of the total ANGRAU rice varieties breeder seed indent. Cotton Dora Sannalu (MTU 1010) and Samba Mahsuri (BPT 5204) have the highest average annual cultivation area in the country (3.24 and 2.79 Mha, respectively), contributing significantly to the country's rice production economy with annual contributions

of Rs. 13,705 and Rs. 8,587 crores, respectively, generating an average additional income of Rs. 652.6 and Rs. 587.5 crores annually. Similarly, Swarna (MTU 7029), Vijetha (MTU 1001), and Nellore Mahsuri (NLR 34449) contribute a share of 3.32, 2.89, and 1.84 percent, respectively, to the country's total rice revenue.

Other varieties released in recent years and in increasing demand at the national level are Chandra (MTU 1153) and Tarangini (MTU 1156), with more than 70 quintals GOI breeder seed indent over the years. These varieties are mostly cultivated in the states of Chattisgarh, Madhya Pradesh, Odisha, and West Bengal for export purposes under the Non-Basmati category due to their long slender grain with a kernel length exceeding 6 mm and convenient duration of 120-125 days. MTU 1153, with its long slender grain and kernel length of 6.38 mm, L/B ratio of 2.95, coupled with a test weight of 23.5 g and high yield potential of 7 t/ha with BPH and blast tolerance, in addition to low grain shattering, has been rapidly replacing the traditional strongholds of MTU1010, the Mega rice variety, across the country and is preferred for export under the non-basmati category to African countries. MTU 1153 has achieved a milestone of Rs. 200 crore in public bred excellence and has proven to be a



game-changer in generating increased returns and profits for farmers across the country, regardless of the agro-climatic and ecological situations.

The variety Pushyami (MTU 1075) is cultivated in more than 30,000 ha in West Bengal and around 50,000 ha in Odisha due to its high yield potential and resistance to Brown Plant Hopper (BPH). Similarly, Bheema (MTU 1140) is popularly grown for its submergence tolerance in West Bengal in over 40,000 ha, while MTU Rice 1223 is grown in rainfed uplands of Chattisgarh in more than 1 lakh ha. Maruteru Samba (MTU 1224) and Maruteru Mahsuri (MTU 1262) are grown for their fine grain in Odisha and Telangana in an area of about 1.20 lakh hectares. Indra (MTU 1061), another predominant rice variety in Andhra Pradesh state after Swarna (MTU 7029) and Samba Mahsuri (BPT 5204), is popular in the state of Telangana for its salinity tolerance, high head rice recovery, and suitability for raw rice. Nellore Dhanyarasi (NLR 3354) and Nellore Mahsuri (NLR 34449) are popular in Tamil Nadu and are being grown in about 70,000 ha for their grain quality and tolerance to pests and diseases. Sravani (MTU 1239) is grown in Chattisgarh in about 1.30 lakh ha, while Sujatha (MTU 1210) is popular in the states of Odisha (50,000 ha), Telangana (10,000 ha), and West Bengal (20,000 ha). ANGRAU rice varieties occupy the lion's share in the state of Andhra Pradesh, with 15.57 lakh ha out of 17.42 lakh ha of Kharif rice grown area and 6.21 lakh ha out of 7.62 lakh ha of Rabi rice area under ANGRAU varieties. An output of 123.14 lakh tons was produced by cultivating ANGRAU rice varieties, accounting for 88 percent of the state's total rice production. The ANGRAU varieties, Sri Druthi (MTU 1121), Swarna (MTU 7029), and Samba Mahsuri (BPT 5204), are the most commonly grown, with 5.03, 3.5, and 3.34 lakh ha, respectively, during 2021-22. Other important ANGRAU rice varieties occupying more than 1.0 lakh ha in the state are Indra (MTU 1061) and Nellore Mahsuri (NLR 34449). The GOI breeder seed indents for 2022-23 reveal a maximum indent of 799.25 quintals for 33 ANGRAU rice varieties, accounting for 23.41 percent of the total GOI paddy breeder seed indent. ANGRAU has consistently ranked first compared to the country's other Rice Research

Institutes and State Agricultural Universities regarding GOI breeder seed indent since 2015. Furthermore, 26.8 percent of ANGRAU's rice varieties receive regular indents from the GOI. Apart from the Central Indents received for Breeder Seed, ANGRAU also receives indents from Seeds Men Associations, Seed Production Societies, Agencies, and Progressive Seed Growers, accounting for more than 2000 quintals of Breeder Seed every year pertaining to more than 35 ANGRAU rice varieties, resulting in the generation of 2.5-3.0 crores of revolving funds.

In 2022, ANGRAU released four rice varieties through the Central Variety Release Committee (CVRC) and three rice varieties through the State Variety Release Committee (SVRC). The CVRC varieties, namely MTU Rice 1273 and MTU Rice 1293, are short-duration introgressed lines of the Mega Rice Variety, MTU 1010, with a duration of 115-120 days, characterized by non-shattering nature and tolerance for BPH and blast. MTU 1293 is also tolerant to salinity. These varieties feature long slender grains with a kernel length exceeding 6mm and are highly suitable for export under the Non-Basmati category from Kakinada port to African countries. Additionally, MTU Rice 1310 and MTU Rice 1321 are high-yielding medium-duration, medium-slender grain type varieties with a duration of 140 days, boasting high head rice recovery and suitability for raw rice. These varieties received appreciation and acceptance from farmers in the Krishna zone during the Karif 2023 season. MTU Rice 1321 was reported to be preferred by consumers in the OFTs conducted by IRRI during 2023.

The SVRC varieties include MTU Rice 1318, highly non-lodging and popularly known as non-lodging Swarna, due to its high yield potential, non-ratooning nature, tolerance to submergence, and mild salinity, despite its slightly longer duration of 5-7 days compared to Swarna. It has replaced more than 2.0 lakh ha. of Swarna, MTU 1061, and MTU 1064 areas, particularly in the Godavari, Krishna, and North coastal zones of Andhra Pradesh, poised to become a mega rice variety in the coming years. Furthermore, MTU Rice 1232 is highly tolerant to submergence and flash floods for up to one month, even after 15 days of age in the nursery, while MCM Rice 103 meets the



long-standing demand for a 140-day duration, fine grain, and salinity-tolerant variety.

In 2023, two rice varieties, namely, MTU Rice 1275 and BPT 3050, were released under CVRC, while MTU Rice 1271 and BPT 2846, fine grain, high-yielding alternatives with high HRR and good cooking quality, were released as alternatives to BPT 5204. The first low glycemic index, high antioxidant activity black rice variety BPT 2841, along with the first Zinc biofortified rice variety, NLR Rice 3238, were released under SVRC and are in high demand from farmers in Telangana, Tamil Nadu, and Karnataka.

It is estimated that 14 million hectares of rice area in the country are under ANGRAU rice varieties, resulting in an average annual production of about 38 million tonnes, accounting for approximately Rs. 62,317 crores of revenue generation annually, equivalent to 33.15 per cent of the total revenue generated from rice production, and contributing about 2.22 per cent to the country's Agriculture GVA. ANGRAU rice varieties also account for 33 per cent of the total non-basmati rice exports from the country, resulting in an annual export revenue of Rs. 8,073 crores. ANGRAU rice varieties are consumed by one out of every three Indian families with rice as their staple food and by nine out of every ten families in the state of Andhra Pradesh. State rice farmers are estimated to have earned Rs. 20,243 crores through the cultivation of ANGRAU rice varieties.

Genetic Stocks and Other Technologies:

MTU IJ 206-7-4-1 (BM 71) and MTU 1184, along with BPT 2848 and MCM 109, have been registered as trait-specific genetic stocks with NBPGR, New Delhi. These registrations cover traits such as BPH resistance, submergence tolerance, high protein content, and salinity tolerance, providing valuable resources for Rice Research Scientists.

MILLETS

Millets have been an integral part of Agriculture and food systems for centuries, offering unique nutritional benefits and resilience in diverse agro-climatic conditions. In the context of Andhra Pradesh, the pioneering efforts of Acharya N.G. Ranga Agricultural University (ANGRAU) have significantly contributed to the research and development of millets. ANGRAU, a premier institution in agricultural research and

education, has played a pivotal role in advancing sustainable farming practices and ensuring food security in the region. As the world celebrates the International Year of Millets in 2023, it is essential to recognize the critical role of millets in addressing global challenges such as malnutrition, climate change, and biodiversity loss. Millets are not only nutritious and environmentally sustainable but also contribute to the livelihoods of millions of smallholder farmers worldwide.

Historical Overview of Millets Research Network at ANGRAU

The journey of millet research at ANGRAU spans several decades, marked by significant milestones and achievements. Established with the vision of promoting agricultural innovation and rural development, ANGRAU has been a pioneering force in millet research for over 60 years. During this period, the university has made remarkable strides in enhancing the productivity, resilience, and nutritional value of millet crops. Key research centres such as Regional Agricultural Research Station (RARS), Nandyal, Agricultural Research Station (ARS), Vizianagaram, and ARS, Perumallapalle have been instrumental in conducting ground-breaking research and disseminating knowledge to farmers across the state. Furthermore, other affiliated centres have contributed significantly to advancing millet research, solidifying the university's position as a leader in agricultural innovation.

For maize, primary centres include ARS Peddapuram, established in 2016, and RARS Lam, Guntur, which recently assumed responsibilities from ARS Vijayarai, a verification centre initiated in 2018. Regarding sorghum, main research activities are centred at RARS Nandyal, a significant centre since 1906, which recently integrated the AICRP on Sorghum in 2017. Sub-centres encompass the Agricultural College Farm in Bapatla, relocated in 2017, and ARS Podalakur, reinitiated to focus on varieties suitable for coastal areas. Pearl millet research is anchored at ARS Ananthapuramu, a sub-centre for the AICPMIP since 1972, with additional contributions from the original centres at Dharmavaram and Peddapuram, both of which have since shifted. Verification centres for pearl millet are located at ARS, Podalakuru and ARS, Perumallapalle, with the latter also playing a

pivotal role in finger millet research since 1967 and becoming a voluntary centre for AICRP on small millets in 2000. Finger millet research is further supported by ARS, Vizianagaram, active since 1986 under the AICRP on small millets. Foxtail millet research is concentrated at RARS, Nandyal, a primary centre since 1978 under the AICRP on Small Millets. Additional efforts for other millets include research on proso millet at RARS, Lam, Guntur, since 2015, and work on little millet and barnyard millet at ARS, Vizianagaram and RARS, Nandyal, respectively. ARS, Perumallapalle also contributes to research on little millet. This comprehensive network of research stations ensures a robust and coordinated approach to developing high-yielding, disease-resistant varieties of these critical crops, tailored to the diverse agro-climatic zones of Andhra Pradesh.

Development of High-Yielding, Disease-Resistant Millet Varieties

ANGRAU has been at the forefront of breeding programs aimed at developing millet varieties with superior traits. Through meticulous selection and cross-breeding, researchers have succeeded in creating high-yielding varieties that are resilient to prevalent diseases and pests. These varieties not only ensure a more robust harvest but also contribute to the overall resilience of agricultural ecosystems.

Sorghum: Over the years, the Research Stations of ANGRAU in Andhra Pradesh have diligently introduced numerous sorghum varieties tailored precisely to the region's agricultural requirements, encompassing both white and yellow sorghum types. Each variety, meticulously developed and released, possesses distinctive traits and is adeptly suited to specific soil types and climates. NTJ 1 (Nandyala Tella Jonna-1), debuted in 1988 from the RARS in Nandyal, emerges as a standout white sorghum variant, boasting higher grain yield, a short duration of 105 days, and resilience to drought and lodging. Following suit, NTJ 2, introduced in 1989, maintains the trend of high yield with a slightly shorter duration. Meanwhile, NTJ 3, released in 1995, shines as another high-yielding white sorghum, boasting extended dual-purpose capabilities and non-lodging characteristics. The introduction of NTJ 4 in 2002 highlights advancements in resilience to specific pests and diseases. Moreover, NTJ 5, a recent addition in 2018, revolutionizes with its high yield and suitability for mechanical harvesting. The yellow sorghum varieties, dating back to 1933, exhibit diverse traits catering to varying soil fertility levels and climatic conditions. From N-1 to N-15, these varieties offer improved yields and tolerance to adverse conditions, ensuring sustained agricultural productivity. Furthermore, contributions from ARS stations outside Nandyal, such as Podalakur Jonna (PJ-890) and Teepi Jonna (AJ 140), underscore the collaborative efforts to enhance agricultural diversity and resilience. Altogether, these sorghum varieties

**CFMV 1
(Indravathi)**



Grain yield:
32 – 35 q/ha

**Rich in Fe (58 mg/kg),
Zn (44 mg/kg) &
Ca(428mg/100g)**

PR 202 (C): Fe (35 mg/kg),
Zn (24 mg/kg) &
Ca (357.0 mg/100g)





reflect a continuous commitment to innovation and improvement, significantly enriching the agricultural landscape of Andhra Pradesh.

Pearl Millet: Pearl Millet variety Vijaya, released in 1971 from ARS Vizianagaram, is notable for its 75-85 days duration and 15-16 q/ha yield, recommended for all bajra growing areas in A.P. Following in 1976, Visaka, also from ARS Vizianagaram, offers a similar duration with enhanced yield, suitable for North Coastal districts. Balaji, released in the same year from ARS Perumallapalle, exhibits downy mildew resistance and suits the southern zone with its compact ear heads and bold grain. Nagarjuna, from RARS Lam, released in 1976, is tailored for Prakasam, Anantapur, Nalgonda, and Mahaboobnagar districts. Ananta, a synthetic variety released in 1996 from ARS Anantapur, boasts tolerance to downy mildew and caters to Kurnool and Anantapur districts. Lastly, ABV-04, a biofortified variety released in 2019 from ARS Ananthapuramu, stands out with its high iron and zinc content, along with impressive grain and fodder yields, making it a promising addition to pearl millet cultivation in the region.

Finger Millet: The evolution of Finger Millet varieties released from ANGRAU of Andhra Pradesh spans several decades, revealing a concerted effort towards refining traits such as duration, yield potential, and disease resistance. Commencing in 1958 with VZM 1 and VZM 2, which catered to late kharif and late rabi irrigated conditions respectively, the varieties evolved over the years to address diverse agricultural contexts. Simhadri (VR 256-6) emerged in 1985, boasting increased yield potential and adaptability to late rabi irrigated conditions. Subsequent varieties like Suraj (VR 520) in 1992 and Champavathi (VR 708) in 1997 offered specific advantages, such as early kharif suitability and short duration growth, respectively. The trend continues with later releases like Bharathi (VR 762) in 2006 and SriChaitanya (VR 847) in 2009, which emphasize adaptability to both kharif and rabi seasons, alongside enhanced yield potential and disease resistance. Recent releases, exemplified by Suvarnamukhi (VR 988) and Vegavathi (VR 929) in 2019, prioritize resistance to diseases and nutrient richness, catering to contemporary agricultural challenges. Notably, newer

varieties like Indravathi (VR 1101) in 2020 and Gosthani (VR 1099) in 2022 exhibit advanced traits such as purple pigmentation, disease tolerance, and nutrient richness, reflecting a continuous refinement towards sustainability and productivity. Additionally, variants from other research stations, such as PR 202 (Godavari) from ARS Peddapuram in 1974 and Kalyani from ARS Perumallapalle in 1971, underscore collaborative efforts in varietal development, each tailored to specific regional requirements and agronomic constraints. This chronicle of releases underscores a trajectory of innovation aimed at bolstering agricultural resilience and productivity in Andhra Pradesh.

Foxtail Millet: The foxtail millet variety “Arjuna,” released in 1969 at RARS, Lam, boasts a grain yield of 16-20 quintals per hectare (q/ha) with a relatively short growth duration of 80-85 days. It stands tall at 115-120 cm and is particularly suitable for black and red soils in specific districts. Subsequent varieties, such as “Chitra,” released in 1982 from ARS, Anantapur, and “Prasad,” from RARS, Nandyal in 1985, continue the trend of moderate grain yield and growth duration, each tailored to suit specific soil conditions and regions within Andhra Pradesh. “Lepakshi,” introduced in 1989, stands out for its adaptability to shallow soils and low rainfall conditions, emphasizing resilience and suitability for challenging environments. The 1990s saw the release of several varieties, including “Krishnadevaraya” in 1993 and “Narasimharaya” in 1994, both from RARS, Nandyal. These varieties exhibit nuanced differences in plant height, panicle structure, and seed characteristics, reflecting ongoing efforts to refine and diversify foxtail millet cultivars to meet varied agricultural needs. As we move into the 21st century, newer varieties such as “Srilakshmi,” released in 2002, and “SiA 3085,” in 2011, demonstrate advancements in yield potential, plant height, and disease resistance. “Suryanandi,” introduced in 2012, stands out for its suitability for double cropping and impressive grain yield, indicating a focus on enhancing productivity and sustainability in agricultural practices. The most recent additions, “Garuda” and “Renadu,” released in 2020, offer unique traits such as extra-early duration and high grain and fodder yield, respectively. These varieties underscore the ongoing research and development efforts aimed

at addressing evolving agricultural challenges and maximizing productivity in foxtail millet cultivation. The variety “Mahanandi,” released in 2022, is characterized by its medium duration and high protein content, reflecting a concerted effort to enhance nutritional value alongside agronomic performance. Collectively, these foxtail millet varieties represent a continuum of research-driven innovation aimed at bolstering agricultural productivity, resilience, and sustainability in Andhra Pradesh and beyond.

Proso Millet: The first Proso Millet variety, Vaarada, emerged in 1971 from RARS, Lam. It boasts a duration of 80-85 days, with a grain yield ranging from 15-20 q/ha. Standing tall at 90-100 cm, it exhibits profuse tillering, while its bold and grey grains render it suitable for all areas in the state. Following Vaarada, Nagarjuna (L1387) was introduced in 1988, featuring a shorter duration of 60-65 days and a higher grain yield of 20-25 q/ha. Its compact stature of 80-90 cm, coupled with drought tolerance and semi-loose panicles, underscores its adaptability. Sagar (L5224), also released in 1988 from RARS, Lam, showcases a similar duration of 80-85 days but yields 25-30 q/ha. With a taller stance of 100-110 cm and 6-8 effective tillers, its olive-grey grains exemplify resilience in drought-prone regions. Lastly, Manasa (L 4863), unveiled in 1994, mirrors the characteristics of Sagar with an 80-85 day duration and a yield of 25-30 q/ha. Its suitability for all variga growing areas in the state, coupled with drought tolerance, solidifies its standing in the agricultural landscape. Each variety, delineated by its unique traits and release year, contributes to the agricultural diversity of Andhra Pradesh, catering to varied climatic conditions and farming practices.

PULSES

In Andhra Pradesh, the primary pulse crops include chickpea, blackgram, greengram, and redgram, with minor pulses such as horsegram, cowpea, and rajmash also being cultivated within various cropping systems across the state. The Pulses Research initiative, established under the All India Coordinated Project at Rajendranagar in 1971-72, was intensified and later relocated to Lam in 1980-81. This initiative focuses on several key objectives:

- Developing and identifying early-maturing, high-yielding pulse varieties that are resistant to major diseases and pests specific to different years and seasons in the state through a multidisciplinary approach.
- Standardizing various agricultural and plant protection techniques to maximize yields in different pulse crops.
- Disseminating improved production technologies through capacity-building programs and conducting frontline/on-farm demonstrations.

Pulses Research Centers at ANGRAU operates a network of research centres dedicated to pulse crops, categorized into two main types: major research centres and verification/seed production centres. Each type plays a specific role in advancing pulse crop research and development.

Leading the pulse crop research are the major research centres, including RARS, Lam; RARS, Nandyal; and ARS, Ghantasala. Established in 1980, RARS, Lam serves as the primary research hub for Greengram and Blackgram under the All India Coordinated Research Project (AICRP), with an additional focus on Pigeonpea research. Similarly, RARS, Nandyal, designated as the AICRP main centre for Chickpea research since 2015, contributes significantly to the comprehensive study of Chickpea cultivation. ARS, Ghantasala, established in 2015, specializes in research on Rice fallow pulses, exploring pulses suitable for rice fallow areas.

Moreover, voluntary centres such as RARS, Tirupati; ARS, Podalakur; and ARS, Ragole, actively participate in pulse crop research initiatives, further enriching the research landscape within ANGRAU.

Additionally, the text highlights the pivotal role of verification/seed production centers, such as the Regional Agricultural Research Station (RARS) at Chintapalli, Agricultural Research Station (ARS) at Darsi, and ARS at Peddapuram, in verifying research findings and ensuring seed production for various pulse crops across different regions. These centres contribute significantly to disseminating research outcomes and ensuring the availability of high-quality pulse seeds for farmers. This concerted effort by ANGRAU's pulse research centres plays a crucial role in advancing the sustainability and productivity of



pulse crop cultivation in the region, ultimately benefiting agricultural communities and promoting food security.

Blackgram:

In blackgram, the initial variety, LBG 17, was released in 1985 and boasts resistance to powdery mildew. Subsequent varieties, such as LBG 402 (1988) and LBG 20 (Teja, 1989), exhibit resistance to wilt and YMV, respectively. Throughout the 1990s, multiple varieties were introduced with resistance to various diseases; notable examples include LBG 611 (1993) and LBG 22 (Lam 22, 1994), both resistant to wilt, and LBG 648 (1996), which offers resistance to multiple diseases. High-yielding varieties like LBG 623 (1997) and LBG 685 (1999) also emerged during this period. In the early 2000s, varieties like LBG 645 and PBG 1 (Podalakur minumu) were introduced, the latter being photo-insensitive with dull seeds. The year 2006 witnessed the release of LBG 709, known for its tolerance to YMV. More recent releases include LBG 752 (2009), tolerant to MYMV and photo-insensitive, along with several MYMV-resistant varieties like TBG 104 (2017) and GBG 1 (2018). The latest additions, LBG 884 and LBG 904, both released in 2023, exhibit resistance to MYMV, with LBG 904 additionally demonstrating tolerance to leaf curl virus. Another 2023 variety, TBG 129, offers resistance to YMV. This progression of releases underscores ongoing efforts to enhance disease resistance and yield in blackgram cultivation.

Greengram:

The earliest greengram variety, LGG 127 (Kondaveedu), was released in 1980 and is renowned for its early maturation and high yield. In 1993, two additional varieties were introduced: LGG 407 (Lam 407), resistant to Yellow Mosaic Virus (YMV) and Angular Leaf Spot (ABLS), and LGG 450 (Pushkara), resistant to pre-harvest sprouting. The following year, 1994, witnessed the release of LGG 410, another YMV-resistant variety. In 1997, LGG 460 (Lam 460) was introduced, offering YMV resistance and featuring top bearing. TM 96-2 (Trombay pesara), released in 2006, boasts resistance to powdery mildew. Recent releases include LGG 574 in 2022, tolerant to Mungbean Yellow Mosaic Virus (MYMV) and suitable for rabi season cultivation, along with LGG 607, also

resistant to MYMV. In 2023, two more varieties, LGG 630 and LGG 600, were introduced, both resistant to MYMV, with LGG 600 also suitable for rabi cultivation. This progression underscores a concerted effort to develop disease-resistant varieties, thereby bolstering crop resilience and yield.

Redgram:

The redgram variety LRG 30, known as Palnadu, was introduced in 1980 and is noted for its regeneration capacity and high yield. In 1989, ICPL 332, or Abhaya, was released with moderate resistance to pod borer. The variety introduced in 1997, ICPL 85063, called Lakshmi, is suitable for the rabi season and has bold seeds. LRG 38, or Ranga Bold, introduced in 2002, is high-yielding and less susceptible to pod borer. Lam 41, also known as LRG 41, released in 2006, shows tolerance to the Helicoverpa pod borer. TRG 22, referred to as Tirupati Kandi-1, was introduced in 2010 and is tolerant to terminal moisture stress. In 2015, LRG 52, named Amaravathi, was released with moderate



tolerance to wilt. Three varieties were released in 2020: LRG 105 (Krishna), which is resistant to wilt and Sterility Mosaic Disease (SMD); LRG 133-33 (Sowbhagya), resistant to wilt; and TRG 59 (Tirupati Kandi-59), which shows tolerance to both wilt and SMD. Each variety was developed to address specific agricultural challenges, contributing to improved redgram cultivation in the region.

Bengalgram:

In Bengalgram, the earliest variety, Jyothi, was released in 1980, renowned for its high

yield. ICCV 37 (Kranthi), introduced in 1989, is notable for its resistance to dry root rot. In 1993, ICCV 2 (Swetha) was released as an early maturing Kabuli type. Lam Shanaga 7 (LBeG 7), released in 2006, offers tolerance to wilt. NBeG 3 (Nandyala Sanaga 1), introduced in 2013, is a Desi type tolerant to both drought and wilt. Several varieties were released in 2017: NBeG 47 (Dheera), a Desi type suitable for mechanical harvesting, and NBeG 49 (Nandyal Gram 49), which is wilt-tolerant. Subsequent releases include NBeG 119 (Nandyal Gram 119) in 2016, a Kabuli type for the South Zone, and NBeG 452 (Nandyal Gram 452) in 2020, a high-yielding Desi type also tolerant to wilt. In 2021, NBeG 810 (Nandyal Gram 810), a Kabuli variety for the West Central Zone and North Western Plains Zone, and NBeG 857 (Nandyal Gram 857), which is wilt-tolerant, were released. The latest varieties, released in 2023, include NBeG 776 (Nandyal Gram 776), suitable for mechanical harvest, NBeG 924 (Nandyal Gram 924), wilt-tolerant and released for the Eastern Central Zone, and NBeG 1267 (Nandyal Gram 1267), which is wilt-tolerant and released for the South Zone. These releases reflect a continuous effort to enhance disease resistance, yield, and suitability for different agricultural practices and regions.

Horsegram:

The horsegram variety, ATPHG-11 (Anantha Vulava-1), released by ANGRAU in Andhra Pradesh, was officially notified in 2021. One of its notable characteristics is its resistance to dry root rot, a significant disease affecting horsegram crops. Additionally, ATPHG-11 exhibits tolerance to Yellow Mosaic Virus (YMV), which is crucial for maintaining crop health and yield. These specific features make ATPHG-11 a robust and resilient variety, likely to perform well under various agricultural conditions while ensuring better productivity and reducing the risk of disease-related losses.

Cowpea:

The cowpea variety TPTC 29, also known as Tirupati Cowpea-1, was officially notified in the year 2017. This particular variety is versatile and can be cultivated during multiple seasons, including Kharif (monsoon), Rabi (winter), and Summer. Such adaptability across different growing seasons makes TPTC 29 a valuable

choice for farmers seeking to optimize their crop production throughout the year. The introduction of this variety likely aims to enhance agricultural productivity and sustainability in the region.

Fieldbean:

The first variety, TFB 1 (Tirupati Field Bean 1), was released in 2006. This variety is characterized by its early maturing trait, making it suitable for cultivation in all seasons, thereby providing flexibility and potentially allowing for multiple cropping cycles within a year. The second variety, TFB 2 (Tirupati Field Bean 2), was released in 2010. Unlike TFB 1, TFB 2 is a long-duration variety, which also adapts well to all seasons. The longer growth period of TFB 2 could imply benefits such as higher yield potential or suitability for specific agricultural practices. The adaptability of both varieties to all seasons indicates their robustness and the potential for widespread cultivation in diverse climatic conditions within the region.

Technologies developed:

1. Standardized agricultural techniques have been developed for all pulse crops, including those unique to rice fallow areas in Andhra Pradesh. These techniques encompass seed rate determination, optimal sowing times, fertilization and weed management strategies, drought mitigation practices, foliar nutrition, and irrigation methods.
2. Sources of resistance to major pests and diseases have been successfully identified across all pulse crops cultivated in Andhra Pradesh.
3. Numerous pulse genotypes have been contributed to All India Coordinated Trials, facilitating broader evaluation and dissemination of promising varieties.
4. Integrated pest and disease management technologies have been developed, focusing on critical areas such as viral and fungal diseases, as well as management strategies for Maruca and Helicoverpa infestations, along with addressing soil-borne diseases.
5. Additionally, pulse varieties have been developed to be amenable to mechanical harvesting, enhancing efficiency and productivity in pulse cultivation practices.



Impact of most prominent varieties:

The development of new high-yielding pulse varieties and technologies has spurred an expansion in pulse cultivation areas and a boost in productivity. Significant shifts in both the area and productivity of various pulse crops have been observed between the crop years 1981-82 and 2023-24. During this timeframe, Bengalgram cultivation area saw a substantial rise from 52,000 to 311,000 acres, accompanied by an impressive surge in productivity from 462 kg/ha to 1421 kg/ha, representing a notable 208% increase. Similarly, Blackgram cultivation area expanded from 225,000 to 308,000 acres, with productivity soaring from 566 kg/ha to 1247 kg/ha, marking a 120% increase. Despite a slight decline in the area from 248,000 to 232,000 acres, Redgram witnessed a marginal uptick in productivity from 243 kg/ha to 321 kg/ha, indicating a 29% productivity rise. Despite a significant decrease in cultivation area from 561,000 to 75,000 acres, Greengram experienced a remarkable surge in productivity from 373 kg/ha to 1027 kg/ha, showcasing a notable 175% increase. These findings underscore the substantial impact of variety selection and agricultural practices on pulse crop cultivation, emphasizing the potential for enhanced productivity and agricultural efficiency over time.

COTTON

Cotton holds a central position in the agricultural landscape of Andhra Pradesh, renowned for its high-quality fibre and boasting the highest productivity of cotton in India. This “white gold” crop significantly impacts the state’s economy, social fabric, and industrial development, highlighting its widespread influence and essential role in daily existence. Cotton cultivation serves not only as a source of income for farmers but also as the lifeblood of the textile industry. Additionally, cottonseed, a valuable by-product, provides edible oil and livestock feed, showcasing the crop’s multifaceted economic importance. This integrated network of contributions underscores cotton’s indispensable role in both rural livelihoods and urban industries within Andhra Pradesh.

With a rich history dating back to the Kakatiya dynasty (1083-1323 CE), cotton cultivation in Andhra Pradesh saw a transformative period

with the introduction of American varieties in the 19th century. This innovation propelled the state to become a leading cotton producer in the 20th century. To meet the demands of the textile industry during the Industrial Revolution, the British established Cotton Agriculture Farms in India during 1906. Headquartered in Coimbatore, these farms, along with those in Nandyal, Bellary, and Dharwad, played a pivotal role in producing quality cotton seeds for distribution and large-scale cotton production. Similarly, in 1922, an Agricultural Research Farm was established at Lam to capitalize on the region’s fertile black soils.

Overview of ANGRAU’s Contributions to Cotton Research and Development

Acharya N.G. Ranga Agricultural University (ANGRAU) stands as a pivotal force in propelling Andhra Pradesh’s cotton sector forward, enriching the region’s agricultural landscape with its rich heritage of cotton cultivation. Emphasizing the development of high-yielding extra-long staple (ELS) American cottons post the construction of the Nagarjuna Sagar Project in 1956, research on ELS American cotton commenced in Narasaraopet, Guntur District, in 1958. This endeavour led to the relocation of the research facility to Amaravathi, Guntur District, in 1962, and eventually to the Agricultural Research Station in Lam, Guntur, in 1978. The All-India Coordinated Research Project on Cotton, established in 1971-72 at Amaravathi, later shifted to Lam in 1977-78. This multidisciplinary initiative aimed to conduct comprehensive research, with the Regional Agricultural Research Station in Lam as the main centre and the Regional Agricultural Research Station in Nandyal as the sub-centre. Additionally, cotton research was also conducted at ARS, Adilabad, ARS, Mudhol, and RARS, Warangal, until 2014, in the unified Andhra Pradesh. Post the state’s bifurcation in 2014, ongoing research primarily takes place at the RARS, Lam as the main centre, with the RARS, Nandyal serving as the sub-centre, effectively catering to the needs of cotton farmers.

The formative years of cotton research at ANGRAU, spanning from 1964 to 1994, laid the groundwork for future advancements. During this period, pioneering researchers established the essential infrastructure for cotton research,

including breeding stations and germplasm collections. Their initial efforts were focused on understanding the unique agro-climatic conditions of Andhra Pradesh and identifying cotton varieties suitable for the region. Significant achievements included the development of high-yielding varieties tailored to local conditions and the formulation of best practices for sowing, crop management, and pest control.

The Regional Agricultural Research Station (RARS) in Lam played a pivotal role in these early successes. They spearheaded the development of several noteworthy cotton varieties. Among these, AC 122 (Krishna), released in 1968, stands out for its remarkable tolerance to bollworm and its suitability for cultivation in rice fallows and summer seasons across districts like Nellore, Krishna, Prakasam, and Guntur. With a seed cotton yield of 25 q/ha and a ginning out turn (GOT) of 33.0%, it has consistently demonstrated resilience and high productivity. Another significant variety, LPS 141 (Kanchana), introduced in 1987, is notable for its tolerance to whitefly, *Alternaria*, and *Myrothecium* leaf spots, rendering it suitable for cultivation across all cotton-growing areas of Andhra Pradesh. Its impressive yield potential of 25 q/ha and GOT of 35.0% underscore its value to cotton farmers. Additionally, the Lam hybrid-1, a cross between *G. hirsutum* varieties, released in 1988, exhibits a yield potential of 30-35 q/ha and a GOT of 36.0%, while also demonstrating tolerance to leaf hoppers and *Alternaria* leaf spot disease. Its early maturing nature and suitability for rice fallows and cotton-based cropping systems further augment its appeal. Other notable varieties like LK 861 (1993) and L 389 (1993) bring their own set of advantages, including high yield, immunity to pests, and resilience to adverse conditions, thereby contributing to the diversity and adaptability of cotton cultivation in Andhra Pradesh.

Over the subsequent three decades, spanning from 1994 to 2024, ANGRAU witnessed a significant expansion in cotton research activities. During this period, the research scope broadened considerably, incorporating endeavours to enhance fibre quality, develop disease-resistant breeds, and formulate strategies to combat emerging insect pests. Alongside these efforts, new technologies like hybridization and radiation mutagenesis were embraced for

breeding purposes. ANGRAU fostered active collaborations with national institutions, notably the Central Institute for Cotton Research (CICR), leveraging their expertise and gaining access to elite germplasm resources.

The Regional Agricultural Research Stations (RARS) at Nandyal and Lam played pivotal roles in tailoring new cotton varieties to meet Andhra Pradesh's agricultural requirements. Notable contributions from Nandyal include NA 1325 (Narasimha) (1994) and NA 2708 (Aravinda) (1996), celebrated for their high yields and drought tolerance. Meanwhile, Lam introduced hybrids like LAHH – 4 (1997) and Lam – 604 (1997), boasting resistance against prevalent diseases and pests. Recent introductions like NDLH-2005-4 (Nandyal Cotton-22) (2021), NDLH-2056-4 (Nandyal Cotton-26), NDLA-3104-1 (Nandyal Cotton-27), and NDLA-3116-3 (Nandyal Cotton-28) (2023) from RARS, Nandyal, continue this legacy, offering high yields, resilience to various pests and diseases, and adaptability to changing environmental conditions.

The last two decades marked a period of remarkable breakthroughs and modern interventions in cotton research at ANGRAU. The advent of biotechnology opened up new avenues, with scientists exploring techniques such as Bt cotton technology for insect resistance and developing transgenic varieties with improved fibre quality and stress tolerance. Precision farming technologies like remote sensing and drip irrigation have been integrated to optimize resource management.

Impact of Technologies

Technological advancements such as seed treatment protocols, foliar nutrition, weed management, and pest management have significantly benefited cotton farmers in Andhra Pradesh. Implementation of these methods has resulted in reduced input costs for pesticides and fertilizers, while increasing yields by 10-15% and improving fibre quality. Consequently, farmers have witnessed a potential earning increase of Rs. 8000-10,000 per hectare. State-wide, these advancements have translated into substantial financial benefits, with seed treatment alone contributing Rs. 50-75 crore and integrated pest management (IPM) providing Rs. 1000-1500 crore in economic gains.



SUGARCANE

Sugarcane is a vital commercial crop in Andhra Pradesh, cultivated across a vast area of 40,000 hectares, adapting to various conditions. The state boasts an impressive production output of 32.70 lakh tonnes, with a remarkable cane productivity rate of 82.00 tonnes per hectare. Research endeavors aimed at enhancing sugarcane quality and yield are actively pursued at multiple centers across the state, including Anakapalle, Vuyyuru, Rudrur, Perumallapalle, and Basanthapur. These centers focus on developing improved sugarcane clones tailored for different maturity groups, characterized by high juice sucrose content and suitability for diverse agro-climatic conditions prevalent in the region.

Development of Sugarcane Clones by ANGRAU

The Regional Agricultural Research Station (RARS), Anakapalle, affiliated with ANGRAU, has introduced a variety of sugarcane clones for commercial cultivation, each tailored with unique features to suit different environmental conditions and resist diseases. The timeline of releases is noteworthy: in 1968, the late-maturing Co 62175 was introduced, renowned for its high yield and suitability for jaggery production. This was followed by the release of Co A 71-1, an early-maturing clone favored for jaggery, in 1971. In 1976, Co A 7601, an early-maturing variety with short duration and high nitrogen use efficiency, was introduced alongside Co A 7602, a mid-late clone resistant to red rot and adaptable to waterlogging and moisture stress. In 1978, Co A 7701, an early-maturing clone resistant to red rot, was introduced. Subsequent releases included early-maturing varieties like Co 7508 in 1981 and 85 A 261 in 1996, both rich in juice sucrose, and 87 A 298 in 2002, noted for its good ratooning ability. Additionally, late-maturing varieties such as Co 7706, released in 1989, and Co A 8401, also from the same year, offered red rot resistance. Notable releases in later years included 93A145 in 2006, suitable for diverse soil conditions, and 97 A 85 in 2010, resistant to both red rot and smut. More recent releases, like 98 A 163 and 2001 A 63 in 2012, and 2000A225 and 2003A255 in 2015, focused on adaptability to irrigated and rainfed conditions with resistance to red rot. Clones such as 2005A128 in 2018 and 2009A107 in 2020 targeted assured irrigated and saline soils, while 2009A252, also released in 2020,

and 2012A 319 in 2023, offered robust disease resistance and adaptability to waterlogged and rainfed conditions. At the Agricultural Research Station (ARS) in Vuyyuru, several clones have been released, starting with Co 8013 and 81 V 48 in 1996, both early-maturing and drought-tolerant, with good ratooning capabilities. The early-maturing 91 V 83 and mid-late 83 V 15, released in 2002, were resistant to red rot and smut and tolerant to waterlogging and drought. Clones introduced in 2010, such as 2000 V 59 and 2003 V 46, emphasized high yield and red rot resistance, with 2003 V 46 also suitable for waterlogged conditions. The 2009 V 127, released in 2018, combined high yield with red rot and smut resistance, thriving in saline irrigated areas. The ARS in Perumallapalle introduced Co T 8201 in 1982, a mid-late clone suitable for Rayalaseema districts with high sucrose content and disease resistance. More recently, in 2019, 2005 T 16 (CoT10367), also known as Swarnamukhi, was released, an early-maturing variety with high sucrose content and resistance to red rot and whip smut, responding well to drought management and higher fertilizer doses.

Germplasm registration with NBPGR

The sugarcane clone CoA 16321, also known as 2010A 229, has achieved official registration with the National Bureau of Plant Genetic Resources (NBPGR) due to its exceptional resistance to red rot. This registration, categorized under Trait Specific Germplasm, represents a significant milestone in sugarcane breeding. Red rot poses a severe threat to sugarcane yield and quality, making the designation of CoA 16321 as a red rot-resistant variety particularly noteworthy. This recognition underscores its potential to bolster crop resilience and sustainability. By securing germplasm registration, CoA 16321 will be safeguarded and made accessible for future breeding programs. This will facilitate the development of new sugarcane cultivars with enhanced disease resistance, ultimately benefiting farmers and the sugar industry as a whole.

Impact of ANGRAU Varieties and Technologies

In Andhra Pradesh, a significant portion of the sugarcane cultivation area is dedicated to varieties developed by the Acharya N.G. Ranga Agricultural University (ANGRAU). The leading variety, CoV 09356 (Bharani), occupies

approximately 33% of the total area, making it the most widely planted clone. Close behind is CoA 92081 (Viswamithra), covering about 32% of the area. CoA 14321 (Vasista) is planted on 14% of the land, followed by CoA 14323 (Naveen) with a 5% share. Varieties CoA 05323 (Revathi), CoT 10367 (Swarnamukhi), and CoA 08323 (Simhadri) each cover about 3% of the area, respectively. CoA 11321 (Srimukhi) and CoV 15356 (Ranga) have minimal presence, each occupying 1% of the sugarcane fields. Additionally, other varieties such as Co 7219, Co 7508, CoT 8201, 81A 99, and 83A30 collectively account for the remaining 5% of the cultivated area.

Several sugarcane clones developed by ANGRAU have been adopted across various states in India, reflecting their agronomic performance and adaptability to different regions over the years. The clone CoA 92081, known as Viswamithra, has spread to Odisha, Tamil Nadu, Telangana, and Karnataka, each cultivating it in approximately 5% of their sugarcane-growing areas, with Telangana utilizing it in 10% of its area. Bharani, released as CoV 09356, is significantly adopted in Telangana and Tamil Nadu, covering 12% of their cultivation zones.

The variety CoA 14321, named Vasista, is grown in Odisha (2%) and Telangana, indicating a preference for this clone in these regions. CoA 05323, or Revathi, has found its place in Odisha, being cultivated in 2% of its sugarcane fields. Similarly, CoA 08323, known as Simhadri, is grown in 3% of Odisha's sugarcane area.

The clone CoA 14323, or Naveen, is distributed in both Odisha and Telangana, showcasing its versatility. Notably, CoA 12323, designated as 2006A 223, is extensively planted in Telangana, covering an area of 2,539 hectares. Another prominent variety, 93A145 or Sarada, spans 2,240 hectares in Odisha. Lastly, CoA 89085 is the most widespread among these clones in Odisha, with a substantial cultivation area of 3,400 hectares.

This dissemination of ANGRAU's varieties highlights their impact on sugarcane agriculture beyond the primary state of release.

The widespread adoption of ANGRAU varieties underscores their adaptability, productivity, and acceptance among sugarcane growers across different regions, thereby solidifying ANGRAU's

contribution to the sugarcane industry's advancement and sustainability.

GROUNDNUT

Groundnut, a vital crop in Andhra Pradesh, ranks second only to rice in acreage and economic significance. It serves multiple purposes, from oil extraction to food, fodder, and export, augmenting the agricultural economy and farmers' livelihoods. Cultivated across 5.94 lakh hectares annually, groundnut production stands at approximately 6.00 lakh tonnes. However, with an average productivity of 1,011 kg/ha, significantly below the national average of 1,926 kg/ha, challenges persist. Predominantly rainfed, groundnut cultivation faces moisture stress, erratic rainfall distribution, and soil fertility issues. Excess moisture during pod filling phases and inadequate management exacerbates these challenges. Moreover, pest and disease pressure further threaten yields and quality. Addressing these challenges requires improved agricultural practices, enhanced soil management, and effective pest and disease control measures to elevate groundnut farming's economic viability and sustainability in the state.

Evolution of Groundnut Cultivation

The evolution of groundnut cultivation in Andhra Pradesh is closely intertwined with the development of agricultural research stations. Initially established in 1954 as the Regional Oil Seeds Research Station in Anantapur, the Agricultural Research Station (ARS) moved to Kadiri in 1959. Renamed ARS, Kadiri in 1982 and reinforced with additional staff in 1985, it became a leading centre for groundnut research under the All-India Coordinated Research Project (AICRP) on Groundnut in 1993. Collaboration with the Regional Agricultural Research Station (RARS) in Tirupati, established in 2015, further amplified its impact.

Technological Innovations and Achievements

Significant technological innovations, including biotechnology and disease screening techniques, have marked this journey. Kadiri 6's dominance in cultivation and exports underscores the research's contribution to the national economy, with profits reinvested in infrastructure to enhance research capabilities and support farmers. Key achievements include



the introduction of high-yielding varieties like Kadiri-7 Bold and drought-tolerant varieties like Kadiri-9, along with advances in disease resistance and integrated pest management. The Farmers Participatory Seed Production Programme has enhanced seed quality and farmer income. Together, ARS, Kadiri, and RARS, Tirupati, significantly enhance groundnut cultivation through high-yielding varieties and improved management practices, fostering productivity, profitability, and sustainability in Andhra Pradesh.

Varietal Development

Varietal development in groundnut cultivation has been a cornerstone of agricultural progress in Andhra Pradesh, spearheaded by the Agricultural Research Station (ARS), Kadiri and the Regional Agricultural Research Station (RARS), Tirupati. Aimed at enhancing productivity and resilience, research efforts focused on creating high-yield, drought-tolerant, and disease-resistant varieties tailored to local farming needs. Notable varieties like Kadiri-7 Bold, Kadiri-8 Bold, and Bheema excel in yield and seed size, catering to domestic and export demands. Varieties such as Kadiri-9, Anantha, Rohini, and Dharani are prized for their drought tolerance, ensuring stability in rainfed regions. Kadiri Harithandhra and Kadiri Amaravathi exhibit multiple resistance, bolstering productivity in Karnataka and Maharashtra. Kadiri Chithravathi and Kadiri Lepakshi address specific challenges in leaf spot and yield, respectively. Visishta, a recent addition, boasts superior yield and quality, gaining rapid adoption. These varieties have significantly boosted yields, reduced losses, and increased economic returns for farmers, emphasizing the importance of ongoing research to meet evolving agricultural needs.

Pest and Disease Management

Groundnut cultivation in Andhra Pradesh confronts various pest and disease challenges, including foliar diseases like early and late leaf spot, soil-borne diseases such as stem rot and dry root rot, and viral diseases transmitted by thrips, such as peanut stem necrosis and peanut bud necrosis. Integrated Pest Management (IPM) and Integrated Disease Management (IDM) strategies have been developed and implemented to combat these issues. Cultural practices like crop rotation and intercropping, biological control using agents

like *Trichoderma viride*, and chemical control through seed treatments and timely application of insecticides have been pivotal. Breeding resistant varieties like Kadiri Harithandhra and Kadiri Amaravathi has been successful, alongside innovative approaches like utilizing native *Trichoderma* isolates. Collaborative efforts with institutions like ICRISAT have also contributed to effective management strategies. Field implementation and farmer engagement initiatives have facilitated the widespread adoption of these practices, leading to improved productivity and sustainability in groundnut cultivation.

Advanced Agronomic Practices

Groundnut cultivation in Andhra Pradesh relies heavily on advanced agronomic practices and effective crop management strategies to enhance productivity, especially in rainfed areas. These practices include deep ploughing to improve soil aeration, soil testing for nutrient deficiencies, and using certified seeds for better germination. Optimal spacing and timely thinning ensure vigorous plant growth, while balanced fertilization and micronutrient application address nutrient deficiencies. To manage moisture stress, efficient irrigation techniques like drip and sprinkler irrigation are employed, along with mulching and water harvesting methods. Cultivating drought-tolerant varieties like Kadiri-9 and Anantha and adopting groundnut-based intercropping, crop rotation, and relay cropping systems further enhance productivity and sustainability. Integration of groundnut cultivation with agroforestry systems offers additional benefits such as soil erosion control and improved microclimatic conditions. These comprehensive approaches contribute to the resilience and competitiveness of groundnut farming in Andhra Pradesh.

Breeder Seed Production

Breeder seed production is vital for maintaining groundnut crop quality and yield. These seeds, crucial for producing foundation and certified seeds, ensure genetic purity and desirable traits, enhancing productivity, pest resistance, and drought tolerance. They provide consistency in seed quality and form the basis for seed multiplication programs. Farmer participatory seed production, initiated in 2008, empowers

farmers and boosts seed production. Through training and support, farmers produce high-quality seeds, gaining financial stability and ensuring seed quality. This program has led to infrastructure development at research stations, reinforcing ongoing research and extension efforts. The breeding programs at ARS Kadiri and RARS Tirupati have made notable national contributions. Varieties like Kadiri-6 have earned national recognition, dominating cultivation and exports. These stations fulfil a significant portion of the national breeder seed indent, ensuring a steady supply of quality seeds across states. This distribution, coupled with employment generation and infrastructure development, underscores the programs' impact on groundnut farming and the agricultural sector's growth.

Technological Transfer and Farmer Engagement

Technological transfer and farmer engagement are crucial for translating groundnut research advancements into practical benefits. Methods include on-farm trials, training programs, field days, media dissemination, and farmer field schools. Frontline demonstrations validate research, encourage adoption, build confidence, and generate feedback. Krishi Vigyan Kendras and Agricultural Colleges play vital roles in extension services, capacity building, collaborative research, farmer empowerment, and feedback mechanisms. Their contributions bridge the gap between research and farmers, ensuring timely dissemination of technologies, educating future agricultural professionals, conducting joint research projects, empowering farmers, and facilitating feedback loops for continuous improvement. Through these efforts, groundnut cultivation in Andhra Pradesh can further enhance productivity, sustainability, and socioeconomic development.

OILSEEDS

Andhra Pradesh, a significant agricultural state, has a rich tradition of cultivating oilseed crops like groundnut, sunflower, castor, sesame, and niger, crucial for the state's economy, industry, and export. Groundnut and sunflower are particularly vital, contributing significantly to oilseed production, with the region's diverse climate supporting their growth, sustaining many small farmers. Oilseed cultivation boosts the

state's agricultural GDP, offers essential oils and protein-rich by-products, and supports various industries like cosmetics and biofuels, while also aiding soil fertility and risk management, promoting sustainable farming. ANGRAU's focused research on oilseeds aims to increase productivity, ensure food security, and uplift farmers' socio-economic status by developing high-yield, high-quality varieties and addressing pest, disease, and climate challenges. Groundnut, sunflower, castor, sesame, and niger have deep roots in Andhra Pradesh's agricultural heritage, each playing unique roles in the landscape. ANGRAU's six-decade journey has transformed oilseed farming, overcoming historical challenges and innovating to empower farmers and advance the sector. Founded with a mission to modernize agriculture, ANGRAU's dedicated research endeavours aim to enhance the productivity and profitability of oilseed crops, recognizing their significance in Andhra Pradesh's economy.

Research Milestones and Achievements

In its early years, ANGRAU focused on varietal improvement, agronomic practices, pest and disease management, post-harvest technology, and extension services tailored to the needs of oilseed farmers. This comprehensive approach yielded significant milestones from the 1960s to the 1980s. The establishment of research stations across agro-climatic zones facilitated the evaluation and enhancement of indigenous germplasm, leading to the development of high-yielding varieties like TMV 2, JL 24, K-6, Narayani, Kalahasthi, K-1812, and TCGS 1694 in groundnut, and hybrids such as APSH 11 and NDSH-1 in sunflower. Additionally, ANGRAU's breeding programs produced resistant varieties like Aruna and Kranthi in castor, addressing pest and drought challenges. Implementation of integrated pest management techniques and agronomic advancements further improved productivity and resource efficiency. Research efforts extended to sesame and released varieties Gauri (1976), Madhavi, YLM-17, YLM-66 resulting in varieties with enhanced oil content and disease resistance.

Scientific Progress

Research progress at ANGRAU over the past six decades has significantly advanced the cultivation of various oilseed crops, including groundnut, sunflower, castor, sesame, and niger.

Groundnut research has focused on breeding high-yield varieties resilient to environmental challenges. Varieties like Kadiri-1 (1971), Vemana (1993), Narayani (2002), Kalahasthi (2002), K-6 (2002), K-9 (2009), K 1812 (Kadiri Lepakshi) (2021), TCGS 1694 (Visishta) (2022), TCGS 1707 (ICAR-Konark) (2023), and TCGS 1522 (Himani) (2023) have notably increased groundnut yields in Andhra Pradesh. Pest and disease management strategies, employing integrated pest management (IPM) and biological control agents, have minimized yield loss. Agronomic practices, precision farming tools, and soil health management techniques have enhanced groundnut productivity.

Sunflower, introduced by ANGRAU in the 1980s, has undergone adaptation to local conditions and hybrid development, resulting in varieties like DRS-1, NDSH-1 (2002), and NDSH-1012 (2016) with higher yields and oil quality. Integrated pest management and sustainable farming practices have been crucial in maintaining sunflower crop health.

Castor research has led to the development of high-yielding hybrids like PCH 222, GCH-4, and GCH-7 resilient to environmental stresses. Advancements in cultivation techniques and stress management practices have further improved castor productivity and quality.

Sesame breeding programs have focused on enhancing genetic diversity and oil quality, with varieties like Gauri, Madhavi, Varaha, YLM-17, and YLM-66 offering improved performance and disease resistance. Disease management strategies and crop management practices have been vital in sustaining sesame crop health.

Niger, though less prominent, has received attention for its adaptability to marginal environments. Prominent varieties JNS 28 and Utkal Niger 150 have been identified. Exotic niger lines, IOR 3409, IOR 3410, IOR 3411, and IOR 3412, suitable for longer flower duration, large flower size, and high seed yield, were identified and maintained. Research has aimed at improving yield stability and quality through breeding programs and agronomic interventions. Pest and disease control innovations, coupled with training programs, have supported niger cultivation in resource-poor settings. Overall, ANGRAU's research has contributed significantly to the development and sustainability of oilseed production in Andhra Pradesh.

Over the past six decades, ANGRAU's dedicated research efforts have brought significant improvements to oilseed production and yield in Andhra Pradesh. Introduction of disease-resistant and high-yielding varieties has revolutionized farming practices, resulting in substantial increases in crop output, particularly for groundnut, sunflower, and sesame. These enhancements are reflected in expanded cultivation areas and overall production statistics. Economically, ANGRAU's research has had profound effects, elevating farmers' incomes, reducing risks, and contributing to improved livelihoods. The heightened agricultural productivity has also boosted the state's GDP, with high-oil content sesame varieties opening new markets and enhancing economic stability in rural communities.

The remarkable adoption rates of new varieties and practices underscore ANGRAU's effectiveness in disseminating knowledge through field trials, demonstration plots, and educational programs. Success stories, such as the introduction of new groundnut varieties and hybrid sunflowers, showcase significant increases in yield and profitability across various regions, highlighting the transformative impact of scientific advancements.



SEED PRODUCTION NETWORK - IMPACT ON AGRICULTURAL PROSPERITY

- Acharya N.G. Ranga Agricultural University (ANGRAU) has established a comprehensive seed production infrastructure that significantly contributes to agricultural innovation and prosperity in Andhra Pradesh. With six Regional Agricultural Research Stations and 33 Research Stations across six diverse agro-climatic zones, ANGRAU conducts demand-driven research to develop and promote new seed varieties and technologies. Under the Director (Seeds) and six Zonal Seed Production Officers, ANGRAU meticulously coordinates the seed production process, ensuring high standards and efficiency.
- ANGRAU's dedicated team of scientists and researchers work on developing and releasing new seed varieties that meet the evolving needs of farmers. The university has achieved notable successes, such as breeding over 497 varieties and hybrids across various crops, including pioneering achievements like the first gall midge resistant rice variety 'Kakatiya' and the striga-resistant yellow sorghum variety 'N-13.' ANGRAU's leadership in hybrid rice technology is highlighted by the development of APHR 1 and APHR 2 rice hybrids.

Collaborative Efforts and Public-Private Partnerships

- The university plays a vital role in promoting quality seeds through initiatives like Seed Day events, fostering direct engagement between scientists, extension officers, and farmers. These events facilitate knowledge transfer and adoption of improved seed varieties, enhancing agricultural productivity. Collaborations with Rythu Bharosa Kendras (RBKs) and Farmer Producer Organizations (FPOs) ensure participatory seed production, empowering farmers and fostering self-sufficiency. ANGRAU's Mega Varietal Display event serves as a significant platform for

collaboration, promoting innovation and superior seed varieties. By encouraging dialogue and collaboration, ANGRAU accelerates agricultural development and fosters sustainable growth, enhancing seed quality, farmer empowerment, and sustainable agricultural practices.

Zonal Seed Production System of ANGRAU

- The Zonal Seed Production System (ZSPS) of ANGRAU operates under the Director (Seeds) and the Director of Research, coordinating seed activities across various agro-climatic zones. Six Zonal Seed Production Officers (ZSPOs) oversee seed production in their areas, setting targets, supervising production, ensuring quality standards, and facilitating efficient seed distribution. Beyond supervision, ZSPOs engage in strategic planning, resource allocation, and capacity building, enhancing agricultural productivity and sustainability. By providing quality seeds suited to local conditions, the system increases crop yields, resilience, and reduces production risks. Collaboration between research institutions, seed producers, and farmers fosters knowledge exchange and the adoption of best practices, driving positive transformation in farming communities.

Spread and Adoption of Rice Varieties

- University has significantly influenced agricultural practices in Andhra Pradesh and beyond. ANGRAU's varieties dominate the state's agricultural landscape, with paddy covering 90.04% of the rice area, groundnut 95.06%, black gram 50.16%, and greengram 37.82%. This widespread adoption reflects farmers' trust in ANGRAU's breeding programs. Additionally, the varieties are well-regarded in other states, including Chhattisgarh, West Bengal, Telangana, and Odisha, enhancing agricultural productivity nationwide. Popular ANGRAU rice varieties like BPT 5204 (Samba Mahsuri) and MTU 1121 are extensively cultivated, covering 18.46% and 17.62% of the rice area in Andhra Pradesh, respectively. Other significant varieties, such as MTU 7029, MTU 1061, and NLR



34449, also contribute to the diversity and resilience of rice farming. These varieties have revolutionized agriculture within the state and across India, ensuring food security and supporting farmer livelihoods. ANGRAU's impact on India's food basket and agricultural economy is profound. With over 123 rice varieties developed in six decades, ANGRAU has shaped India's rice production. Mega varieties like Swarna, Cottondora Sannalu, Vijetha, and Samba Mahsuri cover substantial rice cultivation areas, producing millions of tons annually. Economically, these varieties add billions of rupees to the rice production economy, enhancing farmer incomes and contributing significantly to the national agricultural gross value added (GVA). ANGRAU varieties are also prominent in India's non-basmati rice exports, favoured for their high yield and quality, making them crucial to both domestic and international markets.

Impact on Pulses and Groundnut Cultivation

- ANGRAU has significantly contributed to pulse crop improvement programs in India, enhancing agricultural productivity and farmer incomes. Through extensive research in pulse breeding, ANGRAU has developed and released superior varieties of blackgram, greengram, and redgram. These new varieties are designed to overcome major production challenges such as pests, diseases, and environmental stresses, thereby improving crop yields. The university's impact is evident in the widespread adoption of its pulse varieties across several Indian states. ANGRAU-released blackgram varieties, like LBG-752, TBG 104, and LBG 645, are extensively cultivated in Andhra Pradesh, occupying a large portion of the blackgram farming area. Greengram varieties, such as LGG 460, LGG 462, and LGG 407, have also gained significant traction, becoming popular in Andhra Pradesh and other regions. Similarly, redgram varieties like LRG-41 and LRG-52 have been well-received by farmers, highlighting ANGRAU's influence on pulse cultivation.

In groundnut cultivation, ANGRAU's contributions are equally noteworthy. The K-6 variety has become a dominant force in Andhra Pradesh, covering the majority of the state's groundnut farming area. Nationwide, ANGRAU-released groundnut varieties have achieved substantial success, being widely adopted across various states. These efforts have significantly boosted groundnut productivity and profitability, enhanced food security and improving the livelihoods of farmers. Overall, ANGRAU's dedication to crop improvement has had a profound and positive impact on India's agricultural landscape.

Seed Production Trends and Outlook

- ANGRAU has shown significant growth in seed production from 2015-16 to 2023-24, focusing on Breeder Seed Production (BSP) and Foundation Seed Production (FSP). Starting with 16,326.60 quintals in 2015-16, production peaked at 51,238.45 quintals in 2021-22, reflecting efforts to meet rising seed demand. The production saw fluctuations, such as a decline in 2017-18 and another drop to 27,455.80 quintals in 2023-24. BSP and FSP trends highlight the university's strategic emphasis on quality seed development and market adaptability. Moving forward, it aims to boost efficiency by adopting technology, enhancing capacity, and embracing sustainable practices. It plans to tackle challenges by forming partnerships, staying adaptable in market dynamics, and fostering innovation to sustain agricultural productivity.
- ANGRAU's significant strides in agricultural research and seed development have transformed farming, enhancing farmers' lives. Its adaptable and economically viable seed programs have boosted productivity across regions. Continuous support and investment are crucial to maintain this progress. Prioritizing research, infrastructure, and collaboration will solidify its position as a leader in agricultural innovation, ensuring a prosperous and resilient future



IMPROVED VARIETIES / HYBRIDS / CULTIVARS RELEASED FROM ANGRAU IN DIFFERENT CROPS

Improved PADDY varieties / cultivars developed and released from ANGRAU				
	PADDY Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	MTU 1 (Bontha Akkullu)	1932-33	RARS, Maruteru	Tolerant to drought and salinity
2	MTU 2 (Potti Akkullu)	1932-33	RARS, Maruteru	Tolerant to flood and salinity
3	MTU 3 (Potti Basangi)	1932-33	RARS, Maruteru	Suitable for early planted conditions
4	MTU 4 (Pedda Basangi)	1932-33	RARS, Maruteru	Suitable for late planted conditions and tolerant to drought, non-lodging
5	MTU 5 (Botha Krishna Kaatukalu)	1932-33	RARS, Maruteru	Tolerant to flood and lodging
6	MTU 6 (Potti Atragada)	1932-33	RARS, Maruteru	Tolerant to flood
7	MTU 8 (Vanki Sannam)	1932-33	RARS, Maruteru	Compact panicle with good cooking quality
8	MTU 7 (Gutti Kusuma)	1934-35	RARS, Maruteru	Tolerant to drought and lodging
9	MTU 9 (Garika Sannam Vari)	1934-35	RARS, Maruteru	Suitable for saline soils
10	MTU 10 (Sanna Krishna Kaatukalu)	1934-35	RARS, Maruteru	Suitable for uplands
11	MTU 11 (Pedda Konamani)	1934-35	RARS, Maruteru	Withstands deep water condition
12	MTU 12 (Pedda Atragada)	1935-36	RARS, Maruteru	Suitable for low lying and ill-drained areas
13	MTU 13 (Delhi Bhogam)	1937-38	RARS, Maruteru	Suitable for well drained soils
14	MTU 14 (Bontha Atragada)	1939-40	RARS, Maruteru	Tolerant to flood and drought
15	MTU 15 (Daalva Sannam)	1940-41	RARS, Maruteru	Tolerant to drought and salinity
16	MTU 16 (Badava Kusuma)	1940-41	RARS, Maruteru	Suitable for low lying areas
17	MTU 17 (Kodi Budama)	1942-43	RARS, Maruteru	Tolerant to drought and lodging
18	MTU 18 (Kodi Jilama)	1942-43	RARS, Maruteru	Tolerant to drought and lodging
19	MTU 19 (Sannam Kusuma)	1942-43	RARS, Maruteru	Suitable for both heavy and light soils
20	BCP 1	1948	ARS, Nellore	Pureline Selected from Sanna Molagolokulu, Tolerant to blast
21	BCP 2	1948	ARS, Nellore	Pureline Selected from budda Molagolokulu, Tolerant to blast and drought
22	BCP 3	1950	ARS, Nellore	Pureline Selected from Atragada, Tolerant to blast
23	BCP 4	1950	ARS, Nellore	Pureline Selected from Pishanam, Tolerant to blast and drought
24	MTU 20 (Panasa Basangi)	1950-51	RARS, Maruteru	Tolerant to flood and lodging
25	MTU 21 (Prayaga)	1950-51	RARS, Maruteru	Tolerant to lodging and moderately tolerant to salinity
26	MTU 22 (Pedda Kusuma)	1952-53	RARS, Maruteru	Tolerant to lodging and flood
27	BCP 5	1951	ARS, Nellore	Pureline Selected from Potti vadlu, Tolerant to blast and drought
28	BCP 6	1965	ARS, Nellore	Pureline Sel from Molagolokulu, Tolerant to blast and drought
29	Bulk H 9	1965	ARS, Nellore	Pureline Selected from Molagolokulu, Tolerant to blast and drought
30	MTU 23 (Gutti Akkullu)	1967-68	RARS, Maruteru	Tolerant to slight salinity
31	RGL-1 (Gutti krishna katukalu)	1967	ARS, Ragolu	Suitable for early and late planted conditions, withstands over aging in nursery, drought tolerant and resistant to lodging, LS, Sg grain type



32	AKP 70-73 (Kotha Bayahunda)	1972	RARS, Anakapalle	Suitable for Kharif Season, 160-165 days duration, With stands moisture stress and late planting, Fine grain variety
33	MTU 8002 (Gowthami)	1976	RARS, Maruteru	Suitable for shallow submergence
34	MTU 8089 (Vasista)	1976	RARS, Maruteru	Non-lodging with good cooking quality
35	MTU 3626 (Prabhat)	1976	RARS, Maruteru	Blast tolerant, coarse grain suitable for parboiling
36	NLR 9674 (Kotha molagolukulu)	1977	ARS, Nellore	First cross derivative molagolukulu rice variety with blast resistance
37	(RGL-52) Nagavalli	1979	ARS, Ragolu	Semi-dwarf, non-lodging & fertilizer responsive, drought tolerant, withstands moderate salinity and non-shattering, LB,Sg grain type
38	NLR 9672 (Kotha molagolukulu)	1979	ARS, Nellore	First cross derivative molagolukulu rice variety with blast resistance
39	MTU 4569 (Sowbhagya)	1982	RARS, Maruteru	Non-lodging with good cooking quality
40	MTU 6024 (Lakshmi)	1982	RARS, Maruteru	Tolerant to BPH
41	MTU 4407 (Vijaya Mahsuri)	1982	RARS, Maruteru	Nonlodging
42	MTU 7029 (Swarna)	1982	RARS, Maruteru	High adaptability, low nitrogen responsive and BLB tolerant
43	PLA 1000	1982	RARS, Maruteru	Kharif, 155 days duration, Medium slender Brown glume grain, non-lodging, suitable for stagnant flooding and possess good cooking quality
44	Sona Mahsuri	1982	ARS, Bapatla	Resistant to neck blast and tolerant to gall midge, non-lodging and non-shattering and 2 weeks dormancy
45	Dhanya Laxmi	1982	ARS, Bapatla	Tolerant to gall midge and stem borer and awned variety, non-lodging and non-shattering
46	RGL-1746 (Vamshi)	1985	ARS, Ragolu	Semi-dwarf, non-lodging & fertilizer responsive, drought tolerant & non-shattering, Kharif and Rabi, late sown conditions, LS,Sg grain type
47	RGL-1750 (Mahendra)	1985	ARS, Ragolu	Semi-dwarf, non-lodging& fertilizer responsive, drought tolerant & non-shattering and tolerant to over-ageing, LS,Dg grain type
48	RGL-2624 (Pushkala)	1985	ARS, Ragolu	Kharif, Rabi and Shasticum season, non-lodging, drought tolerant, fertilizer responsive and non-shattering; also suitable for rainfed conditions in addition to assured irrigated areas, LB,Sg grain type
49	MTU 5293 (Pratibha)	1986	RARS, Maruteru	BPH tolerant with good grain quality
50	MTU 5249 (Vajram)	1986	RARS, Maruteru	High yielding, non-lodging and first BPH resistant variety
51	BPT 5204 (Samba Mahsuri)	1986	ARS, Bapatla	Non-lodging and non-shattering, non-dormant, excellent cooking quality
52	NLR 9672-96 (Pinakini)	1987	ARS, Nellore	Non lodging, fertilizer responsive, blast tolerant suitable for kharif
53	MTU 2067 (Chaitanya)	1988	RARS, Maruteru	High yielding, BPH tolerant variety
54	NLR 27999 (Tikkana)	1988	ARS, Nellore	Resistant to neck blast, suitable for late planting situations upto October
55	MTU 2077 (Krishnaveni)	1989	RARS, Maruteru	High yielding, BPH tolerant variety
56	MTU 5182 (Nandi)	1991	RARS, Maruteru	Non-lodging and BPH tolerant variety
57	NLR 145 (Swarnamukhi)	1991	ARS, Nellore	Resistant to blast, tolerant to moisture stress
58	NLR 28600 (Simhapuri)	1991	ARS, Nellore	Suitable for kharif season, Blast resistant
59	NLR 28523 (Sriranga)	1991	ARS, Nellore	Adopted to blast endemic areas of southern zone of Andhra Pradesh

60	MTU 9993	1993	RARS, Maruteru	Non-lodging variety suitable for upland situations
61	APHR1	1993	RARS, Maruteru	First rice hybrid in India with fine grain
62	APHR2	1993	RARS, Maruteru	Short duration, medium slender grain hybrid
63	RGL- 2537 (Srikakulam sannalu)	1996	ARS, Ragolu	Fine grain, non-lodging, resistant to gallmidge biotype 4 and blast; suitable for planting with aged seedlings, tolerant to flash floods, LS,Sg grain type
64	RGL-2538 (Vasundhara)	1996	ARS, Ragolu	Resistant to gallmidge biotype 4, suitable for late sown and late planting conditions & non-lodging, LBSg grain type
65	MTU 1001 (Vijetha)	1997	RARS, Maruteru	High yielding, BPH and blast tolerant variety
66	MTU 4870 (Deepthi)	1997	RARS, Maruteru	Non-lodging and tolerant to BLB and BPH
67	MTU 1006 (Maruteru Sannalu)	1997	RARS, Maruteru	Short duration super fine variety for rainfed condition
68	NLR 30491 (Bharani)	1997	ARS, Nellore	Field tolerant to RTV and susceptible to blast disease
69	NLR 33359 (Sravani)	1997	ARS, Nellore	Under field conditions resistant to blast disease.
70	NLR 33365 (Penna)	1997	ARS, Nellore	Resistant to blast
71	NLR 33057 (Swathi)	1997	ARS, Nellore	Non lodging, resistant to blast, tolerant to BLB, fertilizer responsive
72	MTU 1010 (Cottondora sannalu)	1999	RARS, Maruteru	Short duration variety tolerant to BPH and blast
73	NLR 33358 (Somasila)	1999	ARS, Nellore	Resistant to blast and suitable for early kharif and rabi seasons
74	NLR 33641 (Vedagiri)	1999	ARS, Nellore	Adopted to blast endemic areas of southern zone of Andhra Pradesh. Suitable for kharif season
75	BPT 2411 (Surya)	2000	ARS, Bapatla	Resistant to BPH and WBPH, one week seed dormancy, non-lodging and non-shattering,
76	NLR 33654 (Apoorva)	2001	ARS, Nellore	Suitable for rabi season. Under field conditions resistant to blast disease.
77	NDLR 8 (Nandyal Sannalu)	2001	RARS, Nandyal	Non-Lodging, fertilizer responsive, suitable to late sown conditions. Tolerant to blast and BPH
78	MTU 1031 (Tolakari)	2002	RARS, Maruteru	Non-lodging, long duration variety tolerant to BPH and BLB
79	MTU 1032 (Godavari)	2002	RARS, Maruteru	Non-lodging, long duration variety tolerant to BPH and BLB
80	BPT 1768 (Bapatla sannalu)	2002	ARS, Bapatla	Tolerant to BLB, Blast and BPH with stand complete submergence up to 7 days, one week dormancy
81	RGL-2332 (Sreekurma)	2006	ARS, Ragolu	Withstands aged seedlings, tolerant to gallmidge biotype 4 and blast; non-lodging, MS,Sg grain type
82	MTU 1061 (Indra)	2006	RARS, Maruteru	Tolerant to BPH and salinity
83	NLR 33892 (Parthiva)	2006	ARS, Nellore	Suitable for late planting areas in kharif season.
84	MTU 1075 (Pushyami)	2008	RARS, Maruteru	First CVRC released variety with tolerance to BPH
85	RGL-1880 (SriSatya)	2009	ARS, Ragolu	Non-lodging, non-shattering, tolerant to gall midge biotype 4 and drought; suitable for direct sown conditions, LS,Sg grain type
86	MTU 1064 (Amara)	2009	RARS, Maruteru	Tolerant to BPH, BLB and submergence
87	NLR 34449 (Nellore Mashuri)	2009	ARS, Nellore	Tolerant to salinity, Resistant to leaf blast, non-lodging, non-shattering, Fertilizer responsive, photo insensitive, suitable throughout the year.
88	RGL-11414 (Vamsadhara)	2010	ARS, Ragolu	Field tolerant to gall midge biotype 4 and leaf blast. Non-lodging and suitable for transplanting of over aged seedlings in nursery.



89	BPT 2270 (Bhavapuri Sannalu)	2010	ARS, Bapatla	Tolerance to BPH and blast and submergence up to one-week, non-dormant, non-lodging and non-shattering, excellent cooking quality with high head rice recovery
90	BPT 2231 (Akshaya)	2010	ARS, Bapatla	Tolerant to BPH and blast, non-dormant, non-lodging
91	NLR 3041 (Nellore Sona)	2012	ARS, Nellore	Tolerant to leaf and neck blast, non-lodging, non-shattering
92	NLR 40024 (Swetha)	2012	ARS, Nellore	Non lodging, heat and blast tolerant variety.
93	MTU 1121 (Sri Dhruthi)	2015	RARS, Maruteru	Tolerant to BPH, blast and photo insensitive
94	MTU 1153 (Chandra)	2015	RARS, Maruteru	Non-lodging, tolerant to BPH and blast
95	MTU 1140 (Bheema)	2016	RARS, Maruteru	Tolerant to flashfloods and stagnant flooding and anaerobic germination
96	MTU 1156 (Tarangini)	2016	RARS, Maruteru	Tolerant to BPH and blast
97	NDLR 7 (Nandyal Sona)	2016	RARS, Nandyal	Suitable to late sown conditions, fertilizer responsive, non-lodging, non-shattering. Highly tolerant to leaf folder, brown plant hopper and tolerant to blast
98	MTU 1155 (Samvrudhhi)	2017	RARS, Maruteru	Non-lodging and nitrogen responsive
99	MTU 1172 (Ksheera)	2018	RARS, Maruteru	Flood tolerant variety with moderate tolerance to BLB, blast
100	MTU 1190 (Varam)	2018	RARS, Maruteru	Non-lodging, moderately tolerant to blast and BLB
101	MCM 100 (Panduranga)	2018	ARS, Machilipatnam	Medium duration (140 days) salt tolerant rice variety, moderately tolerant to BPH, medium slender grain type, dormancy for 2 weeks
102	BPT 2295 (Bapatla Mahsuri)	2018	ARS, Bapatla	Tolerant to BPH and blast, tolerant to salinity and flash flood conditions for about 7-10 days,
103	MTU 1210 (Sujatha)	2019	RARS, Maruteru	Non-lodging, moderately tolerant to BPH and BLB
104	MTU 1223 (Varsha)	2019	RARS, Maruteru	Suitable for rainfed shallow lowlands and moderately tolerant to BLB, blast
105	MTU 1224 (Maruteru Samba)	2019	RARS, Maruteru	Non-lodging, tolerant to BPH
106	MTU 1239 (Sravani)	2019	RARS, Maruteru	Non-lodging, tolerant to BPH and BLB
107	MTU 1262 (Maruteru Mahsuri)	2019	RARS, Maruteru	Non-lodging, fine grain variety, tolerant to BPH and BLB
108	BPT 2595 (Teja)	2019	ARS, Bapatla	Tolerant to BPH and blast, non-dormant, non-lodging and non-shattering, excellent cooking quality
109	NLR 3354 (Nellore Dhanyarasi)	2019	ARS, Nellore	Fine grain, blast and heat tolerant, non-lodging, dwarf, photo insensitive, suitable for summer and rabi seasons.
110	BPT 2782 (Bhavathi)	2020	ARS, Bapatla	Tolerant to BPH and blast, one week dormancy, non-lodging and non-shattering and excellent cooking quality
111	BPT 2411 (Sasya)	2020	ARS, Bapatla	
112	NLR 40054 (Nellore Sugandha)	2020	ARS, Nellore	Blast and gall midge tolerant rice culture. First aromatic rice variety from ANGRAU
113	NLR 4001 (Nellore siri)	2020	ARS, Nellore	Fine grain rice culture suitable for kharif and early rabi seasons, tolerant to BPH and neck blast.
114	MTU Rice 1212	2021	RARS, Maruteru	Moderately resistant to leaf blast, neck blast, sheath blight, sheath rot and BLB
115	MTU Rice 1280	2021	RARS, Maruteru	Moderately resistant to neck blast, rice tungro, stemborer and leaf folder
116	MTU Rice 1281	2021	RARS, Maruteru	Moderately resistant to leaf blast, neck blast and BPH
117	MTU Rice 1273	2022	RARS, Maruteru	Moderately resistant to blast, brown spot and suitable for exports

118	MTU Rice 1293	2022	RARS, Maruteru	Salinity tolerant variety released through marker assisted breeding and moderately resistant to blast and stem rot
119	MTU Rice 1310	2022	RARS, Maruteru	Moderately resistant to leaf and neck blast
120	MTU Rice 1321	2022	RARS, Maruteru	Moderately resistant to leaf blast, neck blast, sheath blight, stem rot and rice tungro
121	MTU Rice 1232	2022	RARS, Maruteru	Tolerant to flash and stagnant flooding, developed through marker assisted breeding, tolerant to BPH, blast
122	MTU Rice 1318	2022	RARS, Maruteru	Low nitrogen responsive variety and highly non-lodging
123	MCM Rice 103	2022	ARS, Machilipatnam	Medium duration (140 days), fine grain salt tolerant variety, non-lodging, moderately tolerant to WBPH, translucent kernel with good cooking quality
124	MTU Rice 1275	2023	RARS, Maruteru	Moderately resistant to blast, neck blast, BLB and brown spot
125	MTU Rice 1271	2023	RARS, Maruteru	Moderately resistant to BPH, BLB with high grain number
126	BPT Rice 2846	2023	ARS, Bapatla	Moderately resistant to Blast and BPH, good cooking quality.
127	BPT Rice 2841	2023	ARS, Bapatla	Black rice, cooks soft and flaky and suitable for raw rice. Besides high yield potential, it is moderately resistant to Blast and BPH.
128	BPT Rice 3050	2023	ARS, Bapatla	Tolerance to leaf blast, neck blast and brown spot, high HRR and desirable grain quality parameters.
129	NLR Rice 3238	2023	ARS, Nellore	First zinc biofortified rice variety from ANGRAU possess 24.7 ppm zinc in polished rice
130	NLR Rice 3684	2024	ARS, Nellore	Short duration, Medium slender grain type with high head rice recovery (62%) identified for release through CVRC
131	MCM 125	2026	ARS, Machilipatnam	Salt Tolerant Mid late Duration Fine Grain Variety. 145 days duration Suitable for Kharif in Saline Soils and Normal Soils of Andhra Pradesh. Tolerant to salinity (EC 4-8 dS/m), Moderately resistant to BPH, Sheath Blight, Leaf and Neck blast. Non lodging Semi Tall Variety.
132	RGL 7016	2026	ARS, Ragolu	Long Duration Medium Slender Variety .145 -150 days duration .Suitable for Kharif in Irrigated lowlands of Andhra Pradesh. Moderately resistant to BPH, Gall Midge and Blast. Non lodging Semi Dwarf Variety.
133	JMP 132	2026	ARS, J,M,Puram	Long Duration Fine Grain Variety .150- 155 days duration .Suitable for Kharif in Irrigated lowlands of Andhra Pradesh. Moderately resistant to BLB, BPH, Sheath Blight and Neck Blast. Non lodging Semi Dwarf Variety.
134	MTU 1282	2026	RARS, Maruteru	Dual Season Fine Grain Variety . 135 days duration (Kharif), 125 days (Rabi). Suitable for Kharif in North Coastal Region, Krishna delta and Rayalaseema for Kharif and Rabi Season for Andhra Pradesh. Moderately resistant to BPH, Sheath Blight, Leaf blast. Non lodging Semi Dwarf Variety.
135	MTU 1290	2026	RARS, Maruteru	Salt Tolerant Short Duration Export Oriented Variety. 120 days duration. Suitable for Rabi in Saline Soils of Andhra Pradesh. Tolerant to salinity (EC 4-8 dS/m), Moderately resistant to leaf blast and brown spot. Non lodging Semi Dwarf Variety. Long Slender grain with 62% head rice suitable for export purpose.



136	UTR 181	2026	ARS, Utukur	Long Duration Fine Grain Variety . 150-155 days duration . Suitable for Kharif in Irrigated lowlands of Andhra Pradesh. Moderately resistant to BPH and Blast. Non lodging Semi Dwarf Variety. Medium Slender grain with 66% head rice suitable for domestic consumption
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Improved SORGHUM (JOWAR) varieties / cultivars developed and released from ANGRAU

S.No	SORGHUM (JOWAR) Variety	Year of Release	Name of the Research Station	Most significant character (s)
WHITE JOWAR				
1	NTJ 1 (Nandyala Tella Jonna-1)	1988	RARS, Nandyal	Higher grain yield 30-35 q/ha, 105 days duration, Plant height of 170-180 cm with large semi compact panicles, non-lodging and drought tolerant
2	NTJ 2	1989	RARS, Nandyal	High yielding variety 30-35 q/ha, 100 days duration
3	NTJ 3	1995	RARS, Nandyal	High yielding variety 28-30 q/ha, 110 days duration, dual purpose non lodging variety with conical & compact panicles
4	NTJ 4	2002	RARS, Nandyal	Grain yield is 30-35 q/ha, 105 days duration, tolerant to shoot fly and charcoal rot
5	NTJ 5	2018	RARS, Nandyal	Grain yield is 45-60 q/ha, 100 days duration, a high yielding, semi dwarf, non-lodging sorghum entry suitable for mechanical harvesting.
6	Nandyala Tella Jonna (NJ2647)	2018	RARS, Nandyal	105-110 days, 18-25 q/ac, moderately tolerant drought, suitable for mechanical harvesting.
YELLOW JOWAR				
6	N-1 (Cheruku patcha Jonna)	1935	RARS, Nandyal	Yield is 14-16 q/ha having juicy sweet stem, compact cylindrical ear head with lustrous yellow bold grain with reddish purple glume. Fine straw quality. Suitable to the soils of rich and medium fertility.
7	N- 2	1942	RARS, Nandyal	Yield is 15-17 q/ha having juicy sweet stem, compact and oval head with good yellow bold grain with reddish purple glume. Fine straw quality. Suitable to the soils of rich fertility.
8	N -3	1933-34	RARS, Nandyal	Yield is 15-17 q/ha having pithy stem, compact cylindrical ear head with good yellow bold grain with reddish purple glume. Fine straw quality. Suitable to the soils of medium and poor fertility
9	N -4	1939-40	RARS, Nandyal	Yield is 15-17 q/ha having pithy stem, very compact oval ear head with yellow bold grain with reddish purple glume. Suitable to the soils of rich and medium fertility.
10	N-5	1939-41	RARS, Nandyal	Yield is 15-17 q/ha having pithy stem, compact oval ear head with yellow bold grain with reddish purple glume. Suitable to red, black and mixed soils of varying fertility.
11	N-6	1938-39	RARS, Nandyal	Yield is 15-17 q/ha, 105 days duration having pithy stem, compact oval ear head with yellow bold grain with reddish purple glume. Suitable to red, black and mixed soils of varying fertility.
12	N-7	1940-41	RARS, Nandyal	Yield is 15-18 q/ha having pithy stem, very compact oval ear head with yellow bold grain with reddish purple glume. Suitable to the soils of rich fertility.
13	N-8	1940-41	RARS, Nandyal	Yield is 15-18 q/ha having pithy stem, very compact oval ear head with yellow bold grain with reddish purple glume. Suitable to the soils of rich fertility.
14	N-9(Cheruku patcha Jonna)	1940-41	RARS, Nandyal	Yield is 15-18 q/ha having juicy sweet stem, compact and long ear head, good yellow bold grain with reddish purple glume. Suitable to the soils of rich fertility.

15	N-10	1943-44	RARS, Nandyal	Yield is 15-18 q/ha having pithy stem, medium compact long ear head, light yellow bold grain with reddish purple glume. Suitable to shallow gravelly soils.
16	N-11	1943-44	RARS, Nandyal	Yield is 15-18 q/ha having juicy sweet stem, medium compact cylindrical tapering ear head, yellow bold grain with reddish purple glume. Suitable to red and mixed soils of light nature.
17	N-12	1943-44	RARS, Nandyal	Yield is 15-18 q/ha having pithy stem, compact and tapering ear head, yellow bold grain with reddish purple glume. Suitable to red and mixed soils of good fertility.
18	N-13 (Cheruku patcha Jonna)	1966	RARS, Nandyal	Yield is 18-20 q/ha, 120 days duration having semi compact elliptical ear head with yellow bold grain. Recommended for places wherever striga incidence is endemic. Highly tolerant to striga and drought
19	N-14	1989	RARS, Nandyal	Yield is 20-22 q/ha, 120 days duration having non juicy stem, compact and oval panicles with medium bold yellow grains. High grain and fodder yielding drought tolerant variety
20	N-15	2018	RARS, Nandyal	Yield is 30-33 q/ha, 100-110 days duration, high yielding sorghum entry tolerant to drought and also resistant to striga, parasitic weed.
21	PJ-890 (Podalakur Jonna)	1992	ARS, Podalakur	A dual purpose, high yielding, tan grain type jowar variety suitable for <i>rabi</i> .
22	AJ 140 (Teepi jonna)	1996	ARS, Anantapur	105-110 days duration Sweet stalked; dual purpose variety suitable for Kharif and maghi areas of Rayalase Sema.
23	N-15-Nandyala Pachhajonna -(NJ 2446)	2018	RARS, Nandyal	120 days, 10-12 q/ac, moderately tolerant drought, High yielding

Improved FINGER MILLET varieties / cultivars developed and released from ANGRAU

S.No	FINGER MILLET Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	VZM 1	1958	ARS, Vizianagaram	Suitable for late kharif, 105 days duration with a yield potential of 25 q/ha.
2	VZM2	1958	ARS, Vizianagaram	Suitable for late rabi irrigated conditions, 105-110 days duration with yield potential of 31 q/ha. .
3	VR 256-6 (Simhadri)	1985	ARS, Vizianagaram	Suitable for late rabi irrigated conditions, 105-110 days duration, with yield potential of 39 q/ha.
4	VR 520 (Suraj)	1992	ARS, Vizianagaram	Suitable for early kharif and contingent cropping system, 85-90 days duration Yield potential 23 q/ha. Resistant to blast and tolerant to drought.
5	VR 708 (Champavathi)	1997	ARS, Vizianagaram	Short duration suitable for growing in all the seasons with 80-85 days duration. Yield potential 26 q/ha.
6	VR 762 (Bharathi)	2006	ARS, Vizianagaram	Suitable for both in kharif and rabi. Grain yield potential 26-30q/ha, 110-115 days duration. Moderately resistant to blast.
7	VR 847 (Sri Chaitanya)	2009	ARS, Vizianagaram	Medium duration with 115-120 days duration. Suitable for growing both in kharif and rabi. Grain yield potential 30-35q/ha, moderately resistant to blast.
8	VR 936 (Hima)	2012	ARS, Vizianagaram	White grain and moderately resistant to all the forms of Blast, BLB & Brown spot. Medium duration of 115-120 days to maturity. Grain yield potential 28-30q/ha. Responsive to nitrogenous fertilizers.
9	VR 988 (Suvarnamukhi)	2019	ARS, Vizianagaram	It is resistant to all types of blast and banded blight. It can withstand terminal moisture stress hence suitable for rice-fallow-ragi cultivation. The grain yield potential is 35-38 q/ha and matures in 105-110 days.



10	VR 929 (Vegavathi)	2019	ARS, Vizianagaram	Highly resistant to Brown spot, Banded blight and all types of blast. Rich in Zn, Fe, Ca, protein and grain yield of 38 to 40 q/ha and matures within 115-120 days
11	VR 1101 (Indravathi)	2020	ARS, Vizianagaram	Purple pigmented compact ears. It is resistant to all types of blast and banded blight. It is rich in Ca, Fe and Zn with grain yield of 32-34 q/ha.
12	VR 1099 (Gosthani)	2022	ARS, Vizianagaram	Suitable for kharif and rabi. Tolerant to leaf, neck and finger blast and banded blight diseases. Rich in iron and zinc. Grain yield potential is 35-38 q/ha with 110-115 days duration
13	PR 202 (Godavari)	1974	ARS, Peddapuram	High yield, tolerant to blast, long duration, National check
14	PR 1044 (Ratnagiri)	1985	ARS, Peddapuram	Medium duration with rich in protein (14%).
15	PR 10-45 (Gowthami)	2020	ARS, Peddapuram	Tolerant to lodging
16	CFMV 4	2022	ARS, Peddapuram	High yielding and tolerant to lodging
17	Kalyani	1971	ARS, Perumallapalle	Good tillering, suitable for Chittoor, Anantapur and Nellore districts.
18	PPR 2350 (Padmavathi)	1993	ARS, Perumallapalle	Suitable for all ragi areas in the state
19	PPR 2614 (Saptagiri)	1995	ARS, Perumallapalle	Suitable for early planting situation; tolerant to water logging as well as drought situations.
20	PPR 2700 (Vakula)	2012	ARS, Perumallapalle	Suitable to all three seasons. Medium in duration (105 days). Tolerant to blast, non-lodging
21	PPR 1012 (Tirumala)	2019	ARS, Perumallapalle	Suitable to all three seasons. Medium duration high yielding variety. Highly tolerant to blast. High fodder yield. (120 days).
22	Arjuna	1969	RARS, Lam	Grain yield 16-20 q /ha, 80-85 days duration, Plant height 115-120 cm, effective tillers 1-2, ear head long & semicompact, suitable for black and red soils in Prakasam, Kurnool and Mahaboobnagar districts.

Improved FOXTAIL MILLET varieties / cultivars developed and released from ANGRAU

S.No	FOXTAIL MILLET Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	Chitra	1982	ARS, Anantapur	Grain yield 16-20 q /ha, 80-85 days duration, Height 110 cm, tillers 3-4, ear head long & compact, suitable for red soils in Rayalaseema.
2	Prasad	1985	RARS, Nandyal	Plant height is 120 - 130 cm. panicle is long cylindrical and compact and densely packed, small to medium size bristled. Seeds bold and light yellow in colour. Tolerant to Blast and Downy mildew, Terminal drought
3	Lepakshi (AK 132-1)	1989	ARS, Anantapur	Grain yield 18-22 q /ha, Height 95 cm, tillers 4-6, earhead long, thin & compact, suitable for shallow soils & low rainfall conditions.
4	Krishnadevaraya	1993	RARS, Nandyal	Grows to a height of 110 - 120 cm. These are thin stemmed green plants with 4-6 productive tillers. Panicles are 15 - 20 cm long, slender, semi-compact, tip slightly tapering. Panicles profusely covered by medium sized bristles and they are medium in size. medium size, light yellow colour Seeds,. Tolerant to Blast and Downy mildew

5	Narasimharaya	1994	RARS, Nandyal	It grows to a height of 120 - 130 cm. Tall, thin stemmed plants having purple pigmentation at the base with 4-6 tillers. Panicles are 18-20 cm long, semi compact, covered with medium sized bristles. Seeds medium sized, light yellow colour seeds and densely packed. Tolerant to Blast and Downy mildew.
6	Srilakshmi	2002	RARS, Nandyal	Grows to a height of 115 - 120 cm. panicles are semi-compact, purple and drooping having a tuft of pink hairs at the tip. Seeds have a clean appearance with golden yellow colour. Tolerant to Blast and Downy mildew and terminal drought.
7	SiA 3085	2011	RARS, Nandyal	It grows to a height of 145-160 cm. Panicle is long cylindrical and compact and densely packed, small to medium sized bristles. The seeds are medium bold and yellow in colour. Tolerant to Blast and Downy mildew.
8	Suryanandi	2012	RARS, Nandyal	Plant height is 120-130 cm. Panicle is compact, bristles are sparse and green. Suitable for double cropping, 70-75 days duration and non-lodging variety. It gives an average grain yield of 2600 kg/ha. Grain size is medium and colour is golden yellow. Tolerant to Blast and Downy mildew, Terminal drought.
9	SiA 3156	2013	RARS, Nandyal	Plant height is 130- 150 cm. 85 days duration. Panicle is semi compact, presence of pigmented bristles. highly responsive to nitrogenous fertilizers. Tolerant to Blast and Downy mildew.
10	Garuda	2020	RARS, Nandyal	Extra early duration (62 days), non-lodging, mon-culm type. Suitable for mechanical harvesting. The panicle is compact, with compactly packed lobes that lack bristles. The grains are medium bold and orange in colour. Tolerant to Blast and Downy mildew, Terminal drought.
11	Renadu	2020	RARS, Nandyal	80-85 days duration. The panicle is compact, with compactly packed lobes and having dense bristles. The grains are medium bold and cream white in colour. High grain and fodder yield. Tolerant to Blast and Downy mildew, Terminal drought.
12	Mahanandi	2022	RARS, Nandyal	Medium duration variety (85 days) with erect plant type and it has 3-4 tillers with synchronized maturity. The panicle is semi-compact with creamy brown colour grains. Grain contains high protein (12.8 g/100g grain) than popular check SiA 3156. Moderately resistance to leaf blast, downy mildew and tolerant to shoofly.

Improved OTHER MILLET varieties / cultivars developed and released from ANGRAU

	OTHER MILLET Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	PEARL MILLET- Vijaya	1971	ARS, Vizianagaram	75-85 days duration, 15-16 q/ha. Suitable for all bajra growing areas in A.P.
2	PEARL MILLET - Visaka	1976	ARS, Vizianagaram	80-85 days duration, 15-20 q/ha, Suitable for North Coastal districts
3	PEARL MILLET - Balaji	1976	ARS, Perumallapalle	75-80 days duration, 15-20 q/ha. It grows to a height of 150-200 cm. The ear heads are long cylindrical and compact with light grey bold grain Downy mildew resistant, suitable for southern zone.
4	PEARL MILLET - Nagarjuna	1976	RARS, Lam	70-75 days duration, 15-20 q/ha, Suitable for Prakasam, Anantapur, Nalgonda and Mahaboobnagar districts.



5	PEARL MILLET - Ananta	1996	ARS, Anantapur	80-85 days duration, 20-25 q/ha, Tolerant to downy mildew, Suitable for Kurnool and Anantapur Districts.
6	PEARL MILLET - ABV-04	2019	ARS, Ananthapuramu	Biofortified variety (Fe-70ppm & Zn-63 ppm) with 82-85 days duration, grain yield :1500-2500 kg/ha and fodder yield: 5500-6000 kg/ha.
7	PROSO MILLET - Vaarada	1971	RARS, Lam	80-85 days duration, Grain yield 15-20 q/ha, Plant height 90-100 cm, profuse tillering, grain bold and grey in colour, suitable for all areas in the State.
8	PROSO MILLET -L1387 (Nagarjuna)	1988	RARS, Lam	60-65 days duration, Grain yield 20-25 q/ha, Height 80-90 cm, drought tolerant, effective tillers 5-6, panicle semi loose, grain bold, creamy yellow and shinin.
9	PROSO MILLET - L5224 (Sagar)	1988	RASR, Lam	80-85 days duration, 25-30 q/ha, Height 100-110 cm, drought tolerant, effective tillers 6-8, grain olive grey.
10	PROSO MILLET - L 4863 (Manasa)	1994	RARS, Lam	80-85 days duration, 25-30 q/ha, Height 95-100 cm, drought tolerant, suitable for all variga growing areas of the state.
11	PEARL MILLET - APHB 126 (MH 2682)	2025	ARS, Ananthapuramu	84 days, Conical ear heads with grey globular shaped grains. Resistant to lodging, Highly resistant to downy mildew, blast, smut, rust and ergot. Highly resistant to shoot fly, stem borer, Helicoverpa larvae and leaf roller.
12	PROSO MILLET - Alluri (PMV 480)	2025	ARS, Vizainagram	Medium duration (72-77 days), Moderately resistant to Banded blight, Yield 2.2-2.3 t/ha, . Rich in protein content (10.85%). Moderately resistant to Banded blight.
13	LITTLE MILLET - CLMV 3	2024	ARS, Vizainagram	It is an extra early duration (77-81 days) variety and the grain yield is 1450 to 1500 kg/ha. It is fertilizer responsive which responds well even up to 125% of Recommended dose of fertilizer (20-20-20 Kg NPK ha). It fits well in intensive cropping and is also suitable as contingent crop. It is highly resistant to leaf blight, brown spot and moderately resistant to banded blight disease. It contains protein (9.07%), Fe (2.3 mg/100g) and Zn (1.5 mg/100g).
14	LITTLE MILLET - LMV 592 Rishi (CLMV 4)	2026	ARS, Vizainagram	Medium duration (95-100 days), Yield 2.1 – 2.2 t/ha. Moderate resistance to banded blight and tolerant to shoot fly. Open type of panicle with brown coloured grains.

Improved BLACKGRAM varieties / cultivars developed and released from ANGRAU

S.No	BLACKGRAM Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	PDM-1	1971	ARS, Peddapuram	High yielding variety
2	LBG 17 (Krishnaiah)	1985	RARS, Lam	Resistant to powdery mildew
3	LBG 402 (Prabhava)	1988	RARS, Lam	Resistant to wilt
4	LBG 20 (Teja)	1989	RARS, Lam	Photo insensitive and Resistant to MYMV
5	LBG 611 (Kotha Butta Minumu)	1993	RARS, Lam	Resistant to wilt
6	LBG 22	1994	RARS, Lam	Resistant to wilt
7	LBG 648	1996	RARS, Lam	Multiple disease Resistant
8	LBG 623	1997	RARS, Lam	Photo insensitive and high yield
9	LBG 685	1999	RARS, Lam	Resistant to wilt and main stem bearing
10	LBG 645	2002	RARS, Lam	Resistant to wilt and Bold shining seed
11	PBG-1 (Podalakur minumu)	2002	ARS, Podalakur	Photo insensitive, high yielding (10-15 q/ha), dull grain type.

12	PBG -107 (Penusila)	2002	ARS, Podalakur	Photosensitive, high yielding (16-20 q/ha) variety possessing dull grain type and suitable for late sowing.
13	LBG 709	2006	RARS, Lam	Resistant to wilt, Suitable for late sowing
14	LBG 752	2009	RARS, Lam	Resistant to wilt, Tolerant to MYMV, Suitable for late sowing
15	LBG 787	2015	RARS, Lam	Tolerant to MYMV and main stem bearing
16	TBG 104 (Tirupati Minumu 1)	2017	RARS, Tirupati	Medium duration (75-80 days) with erect plant type, Shining black seed medium sized, tolerant to YMV disease
17	GBG 1 (Ghantasala Minumu 1)	2018	ARS, Ghanatasala	YMV tolerant, short duration (70-75 days), photo - insensitive, erect variety with suitability for all seasons. Suitable for Rice fallows after Kharif Paddy (Rabi) and after Rabi Paddy (Summer).
18	LBG 884	2022	RARS, Lam	Resistant to MYMV and Photo insensitive
19	LBG 904	2023	RARS, Lam	Resistant to MYMV and Photo insensitive
20	TBG 129 (Tirupati Minumu 2)	2023	RARS, Tirupati	Matures in 75-80 days, Suitable for Kharif, rabi and rice-fallow conditions, Resistant to YMV, Pods are smooth with shiny bold seed
21	LBG 932	2026	RARS, Lam	85-90 days, A photo insensitive high yielding MYMV resistant to variety. Suitable for machine harvesting. Pods are densely hairy with shiny seed coat.

Improved GREENGRAM varieties / cultivars developed and released from ANGRAU

S.No	GREENGRAM Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	PDM-1	1971	ARS, Peddapuram	High yielding variety
2	LGG 127(Kondaveedu)	1980	RARS, Lam	High yielding
3	LGG 407(Lam 407)	1993	RARS, Lam	Resistant to MYMV and ABLs
4	LGG 450(Pushkara)	1993	RARS, Lam	Resistant to pre harvesting
5	LGG 410(Lam 410)	1994	RARS, Lam	Resistant to MYMV and suitable to rice fallows
6	LGG 460(Lam 460)	1997	RARS, Lam	Resistant to MYMV and top bearing
7	TM 96-2	2006	RARS, Lam	Resistant to powdery mildew
8	LGG 574	2022	RARS, Lam	Resistant to MYMV
9	LGG 607	2022	RARS, Lam	Resistant to MYMV, Photo insensitive
10	LGG 630	2023	RARS, Lam	Resistant to MYMV, Photo insensitive
11	LGG 600	2023	RARS, Lam	Resistant to MYMV, Suitable for rabi season
12	LGG 610	2024	RARS, Lam	70-75 days, resistant to MYMV. Seeds are shiny and medium bold.
13	LGG 628	2025	RARS, Lam	70-75 days, Moderately resistant to MYMV. Seeds are shiny and medium bold.

Improved REDGRAM varieties / cultivars developed and released from ANGRAU

S.No	REDGRAM Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	PDM-1	1971	ARS, Peddapuram	High yielding variety
2	LRG 30 (Palnadu)	1980	RARS, Lam	More regeneration capacity and high yield
3	LRG 332 (Abhaya)	1989	RARS, Lam	Moderately Resistant to pod borer
4	ICPL 85063 (Lahshmi)	1997	RARS, Lam	Suitable to rabi and bold seed
5	LRG 38 (Ranga bold)	2002	RARS, Lam	Tolerant to pod borer
6	LRG 41(Lam 41)	2006	RARS, Lam	Tolerant to <i>Helicoverpa</i> pod borer



7	TRG 22 (Tirupati Kandi-1)	2010	RARS, Tirupati	Medium duration variety (165 days), Tolerant to terminal moisture stress, Suitable for light shallow red soils of Rayalaseema
8	LRG 52 (Amaravathi)	2015	RARS, Lam	Tolerant to wilt
9	LRG 105 (Krishna)	2020	RARS, Lam	Resistant to wilt and SMD
10	LRG 133-33 (Sowbhagya)	2020	RARS, Lam	Resistant to wilt
11	TRG 59 (Tirupati Kandi-59)	2020	RARS, Tirupati	Medium duration variety (160-180 days), Tolerance to wilt and SMD, Indeterminate plant type, seeds are medium bold and brownish orange in colour, pods are green in colour with brown stripes

Improved BENGAL GRAM varieties / cultivars developed and released from ANGRAU

S.No	BENGAL GRAM Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	Jyothi	1978	RARS, Lam	High yielding
2	ICCC 37 (Kranthi)	1989	RARS, Lam	Resistant to dry root rot
3	ICCV 2 (Swetha)	1993	RARS, Lam	Early Kabuli
4	LBeG 7 (Lam Shanaga 7)	2006	RARS, Lam	Tolerant to wilt
5	NBeG 3 (Nandyala Sanaga 1)	2013	RARS, Nandyal	Desi, tolerant to drought, and wilt
6	NBeG 119 (Nandyal Gram 119)	2016	RARS, Nandyal	Kabuli, early, large seeded
7	NBeG 47 (Dheera)	2017	RARS, Nandyal	Desi, suitable for mechanical harvest
8	NBeG 49 (Nandyal Gram 49)	2017	RARS, Nandyal	High yielding desi, tolerant to wilt with attractive seeds
9	NBeG 452 (Nandyal Gram 452)	2020	RARS, Nandyal	High yielding desi, tolerant to wilt
10	NBeG 810 (Nandyal Gram 810)	2021	RARS, Nandyal	Large seeded kabuli
11	NBeG 857 (Nandyal Gram 857)	2021	RARS, Nandyal	High yielding desi, tolerant to wilt, suitable for irrigated conditions.
12	NBeG 776 (Nandyal Gram 776)	2023	RARS, Nandyal	High yielding desi with tolerance to wilt, suitable for mechanical harvest
13	NBeG 924 (Nandyal Gram 924)	2023	RARS, Nandyal	High yielding desi, tolerant to wilt, Released for East Central Zone
14	NBeG 1267 (Nandyal Gram 1267)	2023	RARS, Nandyal	High yielding desi, tolerant to wilt, suitable for mechanical harvest
15	NBeG 844 (Nandyal Gram 844)	2025	RARS, Nandyal	High yielding, extra large seed kabuli tolerant to wilt.

Improved OTHER PULSE varieties / cultivars developed and released from ANGRAU

S.No	PULSE Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	HORSEGRAM: PDM-1	1971	ARS, Peddapuram	High yielding variety
2	HORSEGRAM: ATPHG-11 (Anantha Vulava-1)	2021	ARS, Ananthapuramu	Light greyish brown seed, 100 seed weight: 3.6-4.2 g; Seed yield 800-1100 kg/ha; Highly resistant to dry root rot and moderately tolerant to yellow mosaic virus
3	COWPEA: TPTC 29 (Tirupati Cowpea-1)	2017	RARS, Tirupati	Bushy plant type with bold seed, Matures in 75-85 days, Suitable for Kharif, Rabi and Summer

4	FIELD BEAN: TFB 1 (Tirupati Field Bean 1)	2006	RARS, Tirupati	Early maturing variety (90-110 days), Suitable to all seasons
5	FIELD BEAN: TFB 2 (Tirupati Field Bean 2)	2010	RARS, Tirupati	Long duration variety (160-180 days), Bushy type variety, Suitable to kharif and rabi

Improved GROUNDNUT varieties / cultivars developed and released from ANGRAU

S.No	GROUNDNUT Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	Kadiri 1	1971	ARS, Kadiri	Virginia runner, with alternate branching habit matures in 135 days
2	Kadiri 2	1978	ARS, Kadiri	Virginia Bunch, matures in 120 days efficient in Nitrogen fixation. Shelling out-turn is 78%.
3	Kadiri 3	1978	ARS, Kadiri	Virginia Bunch, long duration type with rose testa and shelling out-turn is 75%.
4	TCG 1704 (Tirupati-1)	1989	RARS, Tirupati	Early maturing and drought tolerant Spanish bunch groundnut variety, leaflets narrow with ashy coating.
5	TCG 1706 (Tirupati-2)	1989	RARS, Tirupati	Strong pegs and recommended for cultivation in black soils, moderately tolerant to kalahasti malady
6	TCG 1518 (Tirupati-3)	1991	RARS, Tirupati	Virginia bunch variety with red testa, Resistant to kalahasti malady, tolerant to foliar diseases, seeds dormant up to 40 days after harvest.
7	Vemana	1993	ARS, Kadiri	Spanish bunch, medium duration variety with medium green foliage and attractive light rose testa and smooth testa. Resistant to prolonged drought (25-30days)
8	TCGS 30 (Tirupati-4)	1995	RARS, Tirupati	High yielding, mid-season moisture stress tolerant, early maturing variety, attractive light rose testa
9	Kadiri 4	1997	ARS, Kadiri	Spanish bunch, early duration, short stature variety with light green foliage, smaller sized pods and attractive light rose testa & smooth testa. Resistant to prolonged drought (25-30days)
10	TCGS 29 (Narayani)	2002	RARS, Tirupati	Early maturing(100days) drought tolerant, red testa, highly stable in different types of soils and situations
11	TCGS320 (Kalahasti)	2002	RARS, Tirupati	A short duration (105-110days) kalahasti malady resistant variety suitable for cultivation all over the state during rabi season
12	Kadiri 5	2002	ARS, Kadiri	Spanish bunch, early duration variety with light green foliage and attractive light rose testa and smooth testa.
13	Kadiri 6	2002	ARS, Kadiri	Spanish bunch, early duration, popular Variety with light green foliage and attractive light rose testa & smooth testa. Bolder size kernels cultivated for both table and oil purpose
14	TCGS 341 (Prasuna)	2006	RARS, Tirupati	Tolerant Kalahasti malady, medium bold seed with light rose testa. Suitable for irrigated dry situation.
15	TPT 25 (Abhaya)	2006	RARS, Tirupati	Drought tolerant, LLS tolerant with fresh seed dormancy, short compact plant type, suitable for high rainfall areas
16	TCGS-APNL-888 (Greeshma)	2009	RARS, Tirupati	Early (95-100days), water use efficient, short compact plant type, LLS tolerant
17	Kadiri 7 Bold	2009	ARS, Kadiri	Virginia bunch, high yielding (50 q per ha) dark foliage, resistant to sucking pest and foliar fungal diseases, Bold size kernels suitable for confectionery purpose suitable for kharif & rabi 100 Kernel weight 75g.
18	Kadiri 8 Bold	2009	ARS, Kadiri	Virginia bunch, high yielding (50 q per ha) dark foliage, resistant to sucking pest and foliar fungal diseases, Bold size kernels suitable for confectionery purpose



19	Kadiri 9	2009	ARS, Kadiri	Spanish Bunch, medium duration variety, dark medium size foliage, resistant to sucking pest, foliar fungal and viral diseases, good shelling 80%. Suitable for drought prone areas.
20	TCGS-APNL- 913 (Rohini)	2010	RARS, Tirupati	Ultra-early (90-95 days), water use efficient, short compact plant type, LLS tolerant
21	TG 47 (Bheema)	2010	RARS, Tirupati	Early Spanish bunch variety with low oil and high sucrose
22	Kadiri Anantha	2010	ARS, Kadiri	Spanish bunch, Early duration variety with light green foliage and attractive light rose testa and smooth testa.
23	Kadiri Harithandhra	2010	ARS, Kadiri	Spanish bunch, high yielding variety, medium green foliage, with pointed tip, tolerant to thrips and foliar fungal diseases.
24	ICGV-00350	2011	RARS, Tirupati	High yield, tolerant to LLS, rust and stem rot diseases
25	TCGS 043 (Dharani)	2012	RARS, Tirupati	Drought tolerant – withstands up to 35 days dry spell, uniform maturity, high SMK%, attractive pods, moderate stature and tolerant to low light conditions
26	Kadiri Amaravathi	2016	ARS, Kadiri	Virginia bunch, high yielding variety with broad and dark green foliage, resistant to sucking pest and foliar fungal diseases with a pod yield potential of 30-40q per ha. Attractive light rose testa colour
27	Kadiri Chithravathi	2017	ARS, Kadiri	Spanish Bunch, Medium duration 115-120 days variety suitable for rabi cultivation. Tolerant to foliar fungal diseases LLS and Rust.
28	TCGS 1073 (Dheeraj)	2018	RARS, Tirupati	Water-use efficient Spanish bunch culture with high yield potential suitable for cultivation in irrigated situation both in kharif and rabi seasons
29	TCGS 1157 (Nithya Haritha)	2018	RARS, Tirupati	Short statured Spanish bunch culture with high yield potential, fresh seed dormant, bears higher frequency of three seeded pods
30	TCGS 894 (Central Pragathi)	2018	RARS, Tirupati	Early, water use efficient, attractive pod and kernels.
31	K 1812 (Kadiri Lepakshi)	2021	ARS, Kadiri	High yielding variety resistant to sucking pest and foliar fungal diseases with a pod yield potential of 35-40 q per ha. Shelling % is ranged from 65% to 70% with smooth testa.
32	TCGS 1694 (Visishta)	2022	RARS, Tirupati	Early, Short statured, FDR, drought and heat tolerant with uniform maturity and quality kernel features like Kadiri 6
33	TCGS 1707 (ICAR-Konark)	2023	RARS, Tirupati	Medium duration, medium statured, moderate resistance to foliar diseases (LLS and rust), water use efficient culture, possess uniform maturity and attractive rose testa colour
34	TCGS 1522 (Himani)	2023	RARS, Tirupati	Medium plant stature, synchronous maturity of pods, attractive pods and kernels (light rose testa colour), high water use efficient culture
35	TCGS-2233 (SURAJ)	2026	RARS, Tirupati	116-120 days, Resistance to foliar diseases (ELS, LLS and Rust) and moderate resistance to soil borne diseases (collar rot, stem rot and dry root rot) and also to major pests viz., Thrips and Spodoptera. Pod yield: 26.85 q/ha and Kernel yield: 18.84 q/ha

Improved OILSEED varieties / cultivars developed and released from ANGRAU

S.No	OILSEED Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	SESAME C1036 (Gouri)	1976	ARS,Yellamanchili	Dark brown seed with 50% oil content and 90 days duration with a yield ptentil of 6.5 q/ha
2	SESAME SP1181 (Madhavi)	1978	ARS,Yellamanchili	Light brown seed with 51% oil content and 70-75 days duration.Suitable in crop sequences with a yield potential of 5 q/ha

3	SESAME YLM-11(Varaha)	1993	ARS,Yellamanchili	Dark brown seed with 50% oil content and 80-85 days duration with a yield potential of 9 to 9.5 q/ha
4	SESAME YLM-17(Goutham)	1993	ARS,Yellamanchili	Light brown seed with 52% oil content and 75 days duration.Suitable in crop sequences with a yield potential of 9.0 q/ha. Moderately tolerant to alternaria leaf disesae.
5	SESAME YLM-66(Sarada)	2009	ARS,Yellamanchili	Light brown seed with 51% oil content and 80-85 days duration with a yield potential of 11-12 q/ha. Moderately tolerant to alternaria leaf disesae.
6	SUNFLOWER APSH 11	1987	RARS, Nandyal	Seed yield is 6-8 q/acre under rainfed and 8-10 q/acre under irrigated condition and resistant to Alternaria and moderately resistant to rust
7	SUNFLOWER NDSH 1	2002	RARS, Nandyal	Seed yield is 14 to 16 q/ha with oil content of 40% and resistant to downy mildew and tolerant to rust diseases with compact seed filling
8	SUNFLOWER NDSH 1012	2016	RARS, Nandyal	Seed yield is 15-20 q/ha under rainfed and 20 to 25 q/ha under irrigated conditions with oil content of 40-41% and moderately resistant to downy mildew
9	YLM -146 (Simhagiri)	2024	ARS, Yelamachali	80-85 days. Moderately tolerant to Macrophomina stem and root rot & phyllody. Dark brown seed variety. Oil percentage- 49-50%

Improved COTTON varieties / hybrids developed and released from ANGRAU

S.No	COTTON Variety / hybrid	Year of Release	Name of the Research Station	Most significant character (s)
1	AC 122 (Krishna)	1968	RARS, Lam	Tolerant to boll worm. suitable for rice fallows/ summer cultivation in Nellore, Krishna, Prakasam and Guntur districts, with seed cotton yield of 25 q/ha and ginning out turn (GOT) of 33.0 %.
2	LPS 141 (Kanchana)	1987	RARS, Lam	Tolerant to whitefly, Alternaria and Myrothecium leaf spots. Suitable for cultivation in all the cotton growing areas of Andhra Pradesh with an yield potential of 25 q/ha and GOT of 35.0 %.
3	Lam hybrid-1	1988	RARS, Lam	An intra- <i>hirsutum</i> cotton hybrid with yield potential of 30-35 q/ha and GOT 36.0%. Tolerant to leaf hoppers and Alternaria leaf spot disease. Early maturing and suitable for rice fallows cultivation/ cotton-based cropping systems in A.P.
4	LK 861	1993	RARS, Lam	High yielding with seed cotton yield of 32 q/ha and GOT of 34.0 %. Immune to whitefly and tolerant to drought with good fiber qualities and possess wider adaptability. Recommended for cultivation for all the cotton growing areas of Andhra Pradesh.
5	L 389	1993	RARS, Lam	Resistant to black arm with good fiber qualities. Recommended for cultivation under NSP areas of Andhra Pradesh.
6	NA 1325 (Narasimha)	1994	RARS, Nandyal	High yielding with drought tolerance, tolerant to sucking pests. Best combiner to develop high yielding varieties.
7	NA 2708 (Aravinda)	1996	RARS, Nandyal	High yielding with drought tolerance.
8	LAHH – 4	1997	RARS, Lam	An intra- <i>hirsutum</i> cotton hybrid with yield potential of 35 q/ha and GOT 34.0%. Tolerant to leaf hoppers with wider adoptability. Recommended for cultivation under rainfed / irrigated areas of Andhra Pradesh.
9	Lam – 604	1997	RARS, Lam	High yield with yield potential of 25-30 q/ha and GOT 35.0 %. Resistant to black arm and BLB. Moderately resistant to leaf hopper. Suitable for all the cotton growing areas of Andhra Pradesh including rice fallow conditions.



10	Lam – 603	1997	RARS, Lam	High yielding with yield potential of 25-30 q/ha and GOT of 35.0%. Resistant to black arm and leaf hoppers. Recommended for cultivation for rice fallows of Andhra Pradesh.
11	LAHH-5	2002	RARS, Lam	An intra- <i>hirsutum</i> cotton hybrid with seed cotton yield of 35.0 q/ha and GOT 35.2 %. Moderately tolerant to leaf hoppers and resistant to BLB and Cercospora leaf spot. Suitable for all the cotton growing areas of Andhra Pradesh under both rain fed and irrigated conditions.
12	Srinandi (NA 2463)	2006	RARS, Nandyal	High yielding with drought tolerance.
13	LAHH 7 (Lam Cotton Hybrid 7)	2006	RARS, Lam	Resistant to leaf hoppers, wide adoptability with seed cotton yield of 34-35 q/ha and GOT 36.0% and good fiber qualities. Recommended for all the cotton growing areas of Andhra Pradesh under both rainfed / irrigated conditions.
14	NDLH 1755 (Sivanandi)	2009	RARS, Nandyal	High yielding, drought tolerant, possess high boll weight and high halo length.
15	NA 2933 (Yaganti)	2010	RARS, Nandyal	High yielding, drought tolerant, suitable for cultivation under both irrigated and rain fed conditions
16	NDLH 1938 (Srirama)	2015	RARS, Nandyal	High yielding, drought tolerant, possess high boll weight and halo length, stay green at harvest with tolerance to sucking pests.
17	LHDP Cotton 1	2018	RARS, Lam	High yielding variety with seed cotton yield of 28-30 q/ha and GOT of 37.0 % - 38.0%. Compact plant type with medium tolerance to leaf hoppers, wider adaptability with good fiber qualities.
18	LAHB Cotton 1	2019	RARS, Lam	Inter-specific cotton hybrid with yield potential of 20-22 q/ha , having a ginning out turn of 30.1% with fine fiber quality of 3.2 µg / inch and tenacity of 35.9 g/tex.
19	NDLH-2005-4 (Nandyal Cotton-22)	2021	RARS, Nandyal	High yielding with high halo length, tolerant to sucking pests.
20	NDLH-2028-2 (Nandyal Cotton-23)	2021	RARS, Nandyal	High yielding with high boll weight, tolerant to sucking pests and drought.
21	NDLH-2051-1 (Nandyal Cotton-24)	2021	RARS, Nandyal	High yielding with high boll weight, tolerant to sucking pests and drought.
22	NDLH-2035-5 (Nandyal Cotton-25)	2022	RARS, Nandyal	High yielding with high boll weight, tolerant to sucking pests and drought.
23	LHDP Cotton 5	2022	RARS, Lam	A new plant type developed with yield potential of 28-30 q/ha and GOT of 37.6 %. Suitable for high density planting system with spacing of 90 cm x 15 cm. Semi determinate type, short (100-110 cm), compact with medium duration (150 days) & synchronous maturity. Tolerant to leaf hoppers and bacterial blight.
24	NDLH-2056-4 (Nandyal Cotton-26)	2023	RARS, Nandyal	High yielding, tolerant to sucking pests, tolerant to leaf blight, Alternaria leaf spot and grey mildew.
25	NDLA-3104-1 (Nandyal Cotton-27)	2023	RARS, Nandyal	High yielding <i>desi</i> cotton variety, possesses medium tolerance to sucking pests.
26	NDLA-3116-3 (Nandyal Cotton-28)	2023	RARS, Nandyal	High yielding variety, possesses medium tolerance to sucking pests tolerant to leaf blight, Alternaria leaf spot and grey mildew.

27	Lam Bt Cotton 2208 BGII (Aditya BGII)	2026	RARS, Lam	160 days, Resistant to major sucking pests such as jassids, thrips, white fly, and aphids; bollworms like <i>Heliothis armigera</i> (<i>Helicoverpa armigera</i>), <i>Earias</i> spp and <i>Spodeptera litura</i>. It also exhibited resistance to important diseases <i>Corynespora</i>, <i>Cercospora</i>, <i>Alternaria</i> leaf spot, <i>Ascochyta</i> leaf blight, rust, TSV and grey mildew. The Bt variety, Lam Bt Cotton 2208 BGII (Aditya BGII), demonstrated a high yield potential, achieving 34.81 q/ha at the Raichur centre during AET-2 (2025–26) and 33.44 q/ha at the Coimbatore centre under normal spacing. It also recorded an average seed cotton yield of 22.81 q/ha over three years of evaluation under South zone across 14 locations recorded. • Boll weight 5 – 6 grams • Fibre length (UHML): 29.1 mm to 30.1mm • Micronaire (Mic): 4- 4.6 µg/inch • Fibre strength: 30.0 – 32.4 g/tex • Uniformity Index (UI) under HVI Mode: 83.2 • Lint index 5.8 – 7.1g • GOT%: 34.7 – 36.3%
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Improved MESTA varieties developed and released from ANGRAU

S.No	MESTA Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	AMV -1	1966	ARS, Amadalavalasa	Stem has less bristles, Tolerant to jassids and mealy bugs
2	AMV -2	1982	ARS, Amadalavalasa	Adaptable to the all mesta growing areas, Tolerant to jassids and mealy bugs
3	AMV -3 (Surya)	1989	ARS, Amadalavalasa	Tolerant to foot and stem rot disease and moderately resistant to jassids and mealy bugs.
4	AMC - 108 (Bheemily)	1989	ARS, Amadalavalasa	Tolerant to foot and stem rot diseases, tolerant to jassids and spiral borer
5	AMV -4 (Kalinga)	1991	ARS, Amadalavalasa	Stem has less bristles, moderately resistant to jassids and foot and stem rot diseases
6	AMV -5 (Durga)	2006	ARS, Amadalavalasa	Good fibre quality, higher fibre yield, tolerant to pests and diseases under field conditions
7	AMV -7 (Janardhan)	2011	ARS, Amadalavalasa	Suitable for mid-May to mid-June sowing, maturity 130-135 days, tolerant to moisture stress, resistant to major pests and diseases
8	AMV -8	2019	ARS, Amadalavalasa	Tolerant to sucking pests like aphids, white flies, leaf hoppers and mealy bugs and better fibre quality.
9	AMV -9 (Aditya)	2019	ARS, Amadalavalasa	Tolerant to foot and stem rot disease. It has better fibre quality parameters like strong fibre (21.03g/tex) with comparable fineness (5.15 tex).
10	AMV-10	2021	ARS, Amadalavalasa	Tolerant to foot and stem rot and sucking pests like aphids, white flies, leaf hoppers and mealy bugs with more fibre strength 20.2 g/tex with comparable fineness (3.6 tex).
11	AMV-11	2024	ARS, Amadalavalasa	High fibre yield with good fibre quality. Resistant to Aphids, whiteflies and Foot & stem roy disease

Improved SUGARCANE varieties developed and released from ANGRAU

S.No	SUGARCANE Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	Co A 71-1	1071	RARS, Anakapalle	Good jaggery variety
2	Co 62175	1968	RARS, Anakapalle	High yielder, good jaggery variety
3	Co A 7601	1976	RARS, Anakapalle	Short duration, high 'N' use efficiency



4	Co A 7602	1976	RARS, Anakapalle	Suitable for water logging, moisture stress conditions and resistant to red rot.
5	Co A 7701	1978	RARS, Anakapalle	Resistant to red rot
6	Co 7508	1981	RARS, Anakapalle	Rich in juice sucrose
7	Co A 8401	1989	RARS, Anakapalle	Resistant to red rot
8	Co 7706	1989	RARS, Anakapalle	Good jaggery variety
9	CoT8201	1991	ARS, Perumallapalle	High yielder, high sugar variety
10	85 A 261	1996	RARS, Anakapalle	Rich in juice sucrose
11	Co 8013	1996	SRS, Vuyyuru	Drought tolerant, red rot resistant, good ratooner
12	81 V 43	1996	SRS, Vuyyuru	High yielding, high tillering, tolerant to water logging and drought, good ratooner, rich in sucrose, susceptible to Co 419 race of red rot. Resistant to smut
13	87 A 298 (Viswamithra)	2002	RARS, Anakapalle	Good ratooner, higher yielder
14	84 A 125 (Madhu)	2002	RARS, Anakapalle	Suitable for water logging and moisture stress conditions.
15	83 V 15	2002	SRS, Vuyyuru	High yielding, high tillering, tolerant to water logging drought tolerant & resistant to red rot & smut
16	91 V 83	2002	SRS, Vuyyuru	Red rot resistant. Rich in sucrose, water logging & drought tolerant
17	93A145 (Sarada)	2006	RARS, Anakapalle	Suitable for water logged, rainfed and saline-alkaline soils.
18	97 A 85 (Visakha)	2010	RARS, Anakapalle	Suitable for late planted rainfed conditions, resistant to red rot and smut
19	2000 V 59	2010	SRS, Vuyyuru	Resistant to red rot & Susceptible to smut, suitable for upland
20	2003 V 46	2010	SRS, Vuyyuru	High yielding resistant to red rot & smut, highly suitable for multiple ratooning, suitable for water logging.
21	98 A 163 (Uttara)	2012	RARS, Anakapalle	Suitable for assured irrigated, limited irrigated late planted rainfed and red rot prone areas.
22	2001 A 63 (Kanakamahalakshmi)	2012	RARS, Anakapalle	Suitable for assured irrigated, limited irrigated late planted rainfed and red rot prone areas
23	2000A225 (Revathi)	2015	RARS, Anakapalle	Suitable for waterlogged and rainfed conditions. Good jaggery variety
24	2003A255 (Simhadri)	2015	RARS, Anakapalle	Suitable for waterlogged and rainfed conditions. Good jaggery variety
25	2005A128 (Srimukhi)	2018	RARS, Anakapalle	Suitable for assured irrigated, limited irrigated late planted and red rot prone areas.
26	2009 V 127	2018	SRS, Vuyyuru	High yielding variety, resistant to red rot & smut rich in sucrose. Also suitable to area with saline irrigated water
27	2005T16	2018	ARS, Perumallapalle	High yielder, high sugar variety, Salinity tolerant, A grade jaggery quality
28	2009A107 (Vasista)	2020	RARS, Anakapalle	Suitable for assured irrigated, limited irrigated, saline soils late planted rainfed and red rot prone areas.
29	2009A252 (Naveen)	2020	RARS, Anakapalle	Suitable for assured irrigated, limited irrigated, saline soils late planted rainfed and red rot prone areas.
30	2012A 319 (Arundhathi)	2023	RARS, Anakapalle	The clone is erect and non-lodging habit. Resistant to red rot, moderately resistant to smut, resistant to YLD under natural conditions and moderately susceptible to Early shoot borer.

31	CoA 20322 (2014A 142)	2025	RARS, Anakapalle	Highly non-lodging, moderately resistant to red rot disease in plug method and resistant to red rot in nodal method. juice sucrose of 17.24 %. moderately resistance to red rot, smut, YLD and less susceptible to early shoot borer, internode borer, scale insect coupled with minimal post deterioration losses the early clone
32	2006A223 (CoA12323)	2026	RARS, Anakapalle	• Early duration (10 months) • It is a thick greenish yellow cane with straight alignment of internodes and Medium size bud. • Yield potential of 128 .37 t/ha (16.21 % over Viswamithra) • Sucrose percentage: 19.98 % • CCS yield (t/ha): 14.23 t/ha • Jaggery yield of 13.82 t/ha • Moderately resistant to Red rot, Wilt and YLD • Least susceptible to Early Shoot borer and Scale insect
Improved TOBACCO varieties developed and released from ANGRAU				
S.No	TOBACCO Variety	Year of Release	Name of the Research Station	Most significant character (s)
1	NBD-119 Nandyal Pogaku-1	2015	RARS, Nandyal	Cured leaf yield is 2150 kg/ha. It is high yielding, drought tolerant variety having good chemical quality.
2	ABD-132 Nandyal Pogaku-2	2023	RARS, Nandyal	It is a high yielding cured leaf yield 2220 kg/ha variety having less harmful smoke constituents (Tar:32.95% to 34.09, Nicotine:1.94 to 3.55% & Carbon monoxide:16.75 to 19.42%) and its seed is having 3.10% of seed oil.

LIST OF ICAR FUNDED RESEARCH PROJECTS AND OTHER PROJECTS OPERATED IN ANGRAU

All India Coordinated Research Projects (AICRP)/All India Network Projects (AINP) funded by ICAR

Krishna Zone

- AICRP Seed (Crops)
- AICRP on MULLaRP, RARS, Lam
- AICRP on Cotton (main centre), RARS, Lam
- AICRP on Pigeonpea, RARS, Lam
- AICRP on Salt Affected Soils & Use of Saline Water in Agriculture, SWS, Bapatla
- AICRP on Post Harvest Engineering & Technology, Bapatla
- AICRP on Farm Implements and Machinery (FIM), Bapatla
- AINP on Soil Biodiversity & Biofertilizers, ARS, Amaravathi
- AICRP on MULLaRP (sub centre), ARS, Ghantasala
- AICRP on Dryland Agriculture (voluntary centre), ARS, Darsi

Godavari Zone

- AICRP on Rice, RARS, Maruteru

- AICRP on Integrated Farming Systems (main centre), RARS, Maruteru
- AINP on Vertebrate Pest Management, RARS, Maruteru
- AICRP on Honey Bees & Pollinators, ARS, Vijayarai
- AICRP on Maize, ARS, Peddapuram.

North Coastal Zone

- AICRP on Sugarcane, RARS, Anakapalle
- AICRP on Pest Harvest Engineering & Technology, RARS, Anakapalle
- AICRP on Biological Control of Crop Pests & Diseases, RARS, Anakapalle
- AICRP on Small Millets, ARS, Vizianagaram
- AICRP on Jute and Allied Fibres, ARS, Amadalavalasa
- AICRP on Integrated Farming Systems (sub centre), ARS, Vizianagaram
- AICRP Rice (Voluntary Centre)

Southern Zone

- AICRP on Groundnut (sub centre), RARS, Tirupati
- AICRP on Forage crops (voluntary centre), RARS, Tirupati
- AICRP on Sesamum, RARS, Tirupati
- AICRP on Rice (voluntary Centre), ARS, Nellore



- AICRP on Mushroom (voluntary centre), RARS, Tirupati
- AINP on Pesticide Residues (voluntary centre), RARS, Tirupati

Scarce Rainfall Zone

- AICRP on Cotton (sub centre), RARS, Nandyal
- AICRP on Small Millets (sub centre), RARS, Nandyal
- AINP on Tobacco, RARS, Nandyal
- AICRP on Sunflower, RARS, Nandyal
- AICRP on Chickpea, RARS, Nandyal
- AICRP on Sorghum, RARS, Nandyal
- AICRP on Dryland Agriculture, ARS, Anantapuramu
- AICRP on Pearl Millet Improvement, ARS, Anantapuramu
- AICRP on Agrometeorology, ARS, Anantapuramu
- AICRP on Castor, ARS, Anantapuramu
- AICRP on Groundnut, ARS, Kadiri

High Altitude and Tribal Zone

- AICRP on Niger, RARS, Chintapalle
- AICRP on MULLaRP (Rajmash) (voluntary centre), RARS, Chintapalle

Other Projects

- Rashtriya Krishi Vikas Yojana-Remunerative Approaches For Agriculture And Allied Sector Rejuvenation (RKVY-RAFTAAR) (ANGRAU-Poshan Incubator), RARS, Tirupati
- DAC-GOI funded Central Sector Scheme “Monitoring of Pesticide Residues at National Level” (Sample Collection Centre), Lam, Guntur
- Large Scale Seed Production of all classes of seeds in ANGRAU at ARS, Chinapavani under RKVY-RAFTAAR.
- Organic farming – Input supply and Training at RARS, Lam, Guntur under RKVY-RAFTAAR.
- Drone Applications in Agriculture at RARS, Lam, Guntur under RKVY-RAFTAAR.
- Development of DUS test guidelines for Mesta (*H. Cannabinus*) and Roselle (*H. sabdariffa*) at ARS, Amadalavalasa.
- Consortia Research Platform - Agrobiodiversity project on small millets at ARS, Vizianagaram.
- Govt of India, NFSM (Commercial crops) IRM: Dissemination of Pink bollworm management strategies at RARS, Lam, Guntur.

- Molecular breeding for the improvement of Swarna sub1 for major abiotic stresses of coastal rice areas at RARS, Maruteru funded by CRIDA under NICRA.
- Consortium Research Platform on Hybrid Technology at RARS, Maruteru funded by ICAR-IARI, New Delhi.
- Mainstreaming rice landraces diversity in varietal development through genome-wide accession studies -Network rice project with IARI at RARS, Maruteru funded by DBT.
- Accelerated Genetic gain in rice Alliance (AGRI Alliance): Irrigated low land Breeding at RARS, Maruteru funded by IRRI.
- Accelerated Genetic gain in rice Alliance (AGRI Alliance): Marginal environment – Salinity stress at ARS, Machilipatnam funded by IRRI.
- Causes and consequences of e-NAM on the economic development of India- A case study at SVAC, Tirupati funded by ICAR – NASF.
- Chitosan based nanoparticulate delivery system for the effective delivery of calcium and its impact on productivity of groundnut at RARS Tirupati funded by DBT.
- Effective delivery of nutrients, insecticides and fungicides through nanoparticulate and its effect on uptake and yields in groundnut and chilli at RARS Tirupati funded by ICAR – NASF.
- Identification of genomic regions and genes for drought and heat tolerance in Groundnut at RARS Tirupati funded by ICAR – NASF.
- Preparation, characterization and evaluation of the efficacy of nanobiochar based nitrogen and potassium fertilizers on maize productivity under rainfed Agro ecosystem of North Western Himalaya Groundnut at RARS Tirupati funded by DST.
- Exploitation of genetic and genome resources for improvement of niger through breeding and biotechnological tools at RARS, Chintapalli funded by DBT.
- GOI- India Meteorological Department, New Delhi funded project on Gramina Krishi Mousam Seva (GKMS) executed at RARS, Anakapalli, Chintapalli, Lam, Tirupati and ARS, Anantapuramu.
- GOI- India Meteorological Department, New Delhi funded project on Forecasting Agricultural output using Space, Agro-meteorology and Land based observations (FASAL) at RARS, Tirupati and ARS, Anantapuramu.



EXTENSION





ADMINISTRATIVE SET-UP & EXTENSION NETWORK.

Technological empowerment of farmers and extension functionaries through extension activities is one of the key factors to achieve higher production, productivity, net income and thereby the food security. The motto of the University Extension is “*Reach the Unreached*”. One out of the three mandates of the University are to deliver effective University Front Line Extension Support to the state of Andhra Pradesh and it reads, “Assist in the process of Transfer of Technology (ToT) through the dissemination of knowledge in collaboration with Development Departments of the Government”

In order to accomplish this mandate, the University has a Directorate of Extension headed by the Director of Extension with the overall responsibilities conducting extension programmes of the University with the following objectives

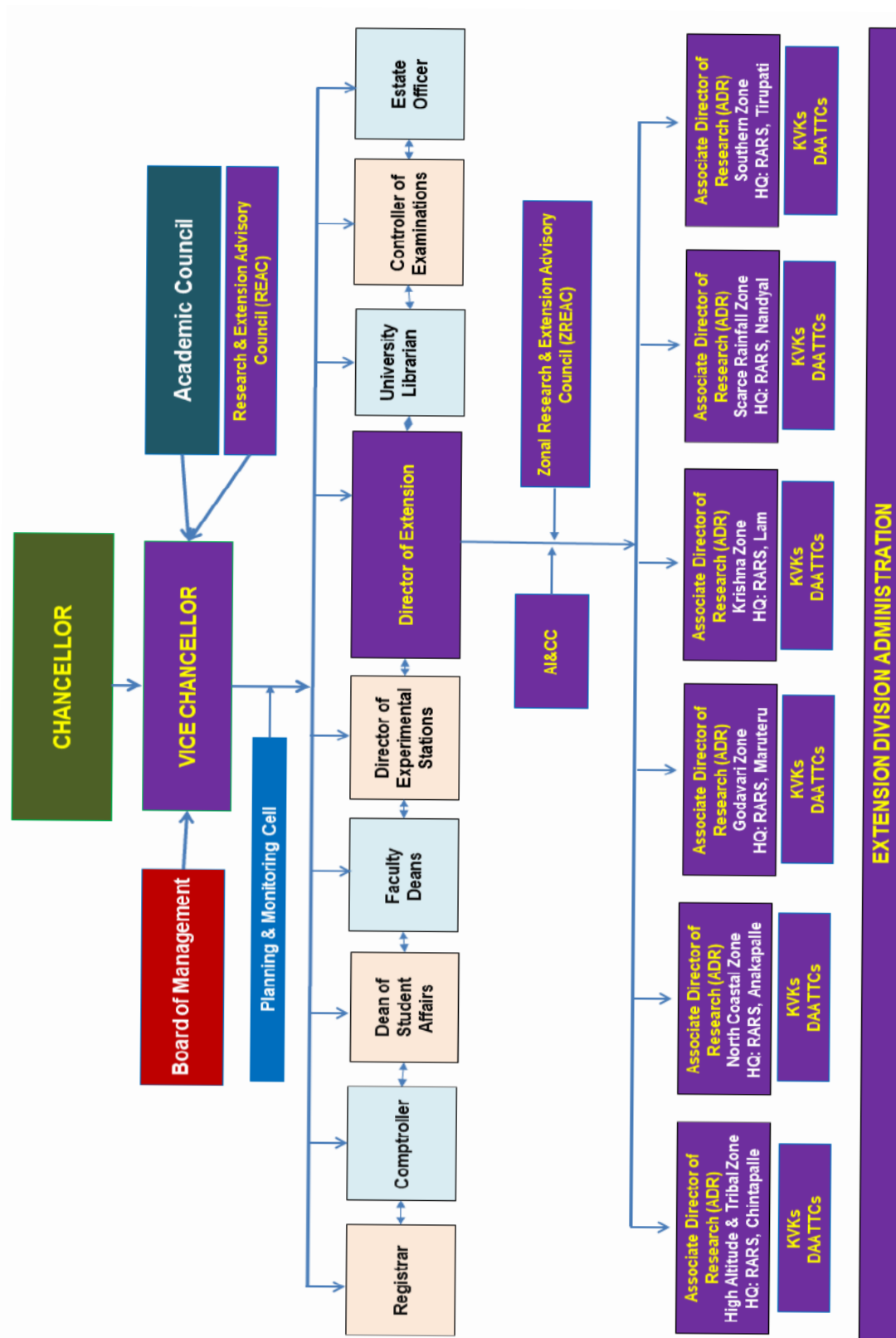
- Technology assessment to promote location specific profitable technologies through On-Farm Trials and Adaptive Trials.
- Training of development department personnel, non-officials and farmers in the latest technologies/ skills in agriculture and allied enterprises and organizing periodic Research – Farmer – Extension interactions.
- Organizing diagnostic surveys and suggesting onsite remedial measures.
- Processing and dissemination of production technologies related to agriculture and allied aspects through print & electronic media like press, radio, television, publications, ICTs and mobiles.

HISTORICAL MILESTONES IN EXTENSION SYSTEM IN UNIVERSITY

The objective of the University, as per section 4 of the Act of 1963, include promotion of field and extension programmes in agriculture and agricultural production in rural areas of the State. The mandate of the University under section 30 of the Act of 1963 is for establishment of Extension services for the purposes of under taking extension programmes, dissemination of information for solving the problems relating to agriculture and domestic fields, developing the

interests of youth in agriculture etc.,

- 1967: The first extension service of APAU popularly known as *District Extension Education Programmes* were introduced in 1967 in Hyderabad district and were subsequently extended to Chittoor (1968) and Guntur (1970) districts.
- 1969: University established *Agricultural Information & Communication Centre (AI&CC)*, on a modest way with financial assistance from KSU-USAID initially and later from ICAR and State Government.
- 1969: Started publication of the farmer’s almanac “*Vyavasaya Panchangam*” with comprehensive information on package of practices of major crops and technologies recommended by the University. This magazine is released every year on the day of Telugu new year “Ugadi”.
- 1970: National Demonstrations Scheme (NDS) was established during 1970-71 in the University in four locations. In commemoration of the Golden Jubilee Year of ICAR, a *Lab to Land Programme* was launched by the APAU in June, 1979.
- 1973: University started publication of the “*Journal of Research-APAU*” (now, *Journal of Research-ANGRAU*), a quarterly journal with peer reviewed publications.
- 1980: In order to improve the productivity of pulses and oilseeds in different regions of the state, two extension education centres were sanctioned by the ICAR at Ananthapur and Rastakuntubai which started functioning from December, 1980 and December, 1981, respectively.
- 1982: Reorganization of the University Extension work followed the reorganization of extension activities of the APAU and implementation of *Training and Visit System* by the Department of Agriculture to streamline the set up of the field extension programme of the University during 1982.
- 1983: The first KVK was established in 1983 at Rastakuntubai of Visakhapatnam District.’
- To optimize the utilization of the available extension resources, integration of all available human resources in different projects / stations was done and established six *Extension Education Units (EEU)* in the





state, under the administrative control of the Associate Directors of Research.

- The Extension Education Units conduct extension activities such as conducting feasibility assessment studies (field trials) for testing new technologies including mini-kit trials of pre-released varieties to get feedback to the scientists, introduction of new cropping patterns, demonstration of latest technologies, organization of Kisan Melas, training programmes for the developmental personnel and the farmers, supervision of Rural Agricultural Work Experience Programme (RAWEP) for final year UG students of B.Sc. in Agriculture.
- 1998: It was realised that the existing EEUs and T&V system are inadequate to give technological back up and end support & capacity building to the extension personnel of the line departments, and during a high-level meeting,



the then Chief Minister N. Chandra Babu Naidu, has put up an idea for establishing University extension centres at district headquarters, and accordingly, Dr IV Subba Rao, the then Vice Chancellor, started the concept of *District Agricultural Advisory and Transfer of Technology Center (DAATTC)* and these centres are popularly called as “*Eruvaka Kendralu*” in Telugu. This kind of initiative is the *first of its kind in the country*, State Agricultural University starting one DAATTC per district located in the District Head Quarter, consisting of multi-disciplinary scientists.

- 2000: University published crop diagnostic bulletins in English and Telugu, a pocket hand book, for each crop, with all the information on pest identification, symptoms of damage and management strategies with colour pictures.
- 2009: University started monthly magazine

in Telugu “*Vyavasayam*” contains latest technologies in Agriculture, Horticulture, Agricultural Engineering and Veterinary Sciences.

- 2015: After bifurcation of the Andhra Pradesh State from Telangana, 13 DAATTCs were reorganized in a way to distribute one Extension Centre per district to scatter the transfer of technology uniformly.
- In 2016: Farmers Call Centre (FCC) is the first and the foremost of its kind established by ANGRAU in the history of Indian Agriculture with an innovative idea of transferring novel scientific technology in Agriculture to the farming community. FCC is accessible to all the farmers of Andhra Pradesh on toll free number 1800 425 0430.
- 2017: University started “*ANGRAU e-newsletter*”, a monthly in-house e-magazine on events in the University for visibility across India, uploaded in University website.
- 2018: Open and Distance Learning Centre (ODLC) established with the major aim to transform ANGRAU from its formal educational system to a dual and convergent mode, by adopting appropriate systems of ODL and ICT (Information & Communication Technology) so as to provide Agricultural knowledge and entrepreneurial skills for self-employment and income generation.

THE IMPACT

The impact of extension services of ANGRAU in Andhra Pradesh has been significant across various services of the society

Increased Agricultural Productivity

- Extension services have played a crucial role in improving agricultural productivity by disseminating improved agricultural



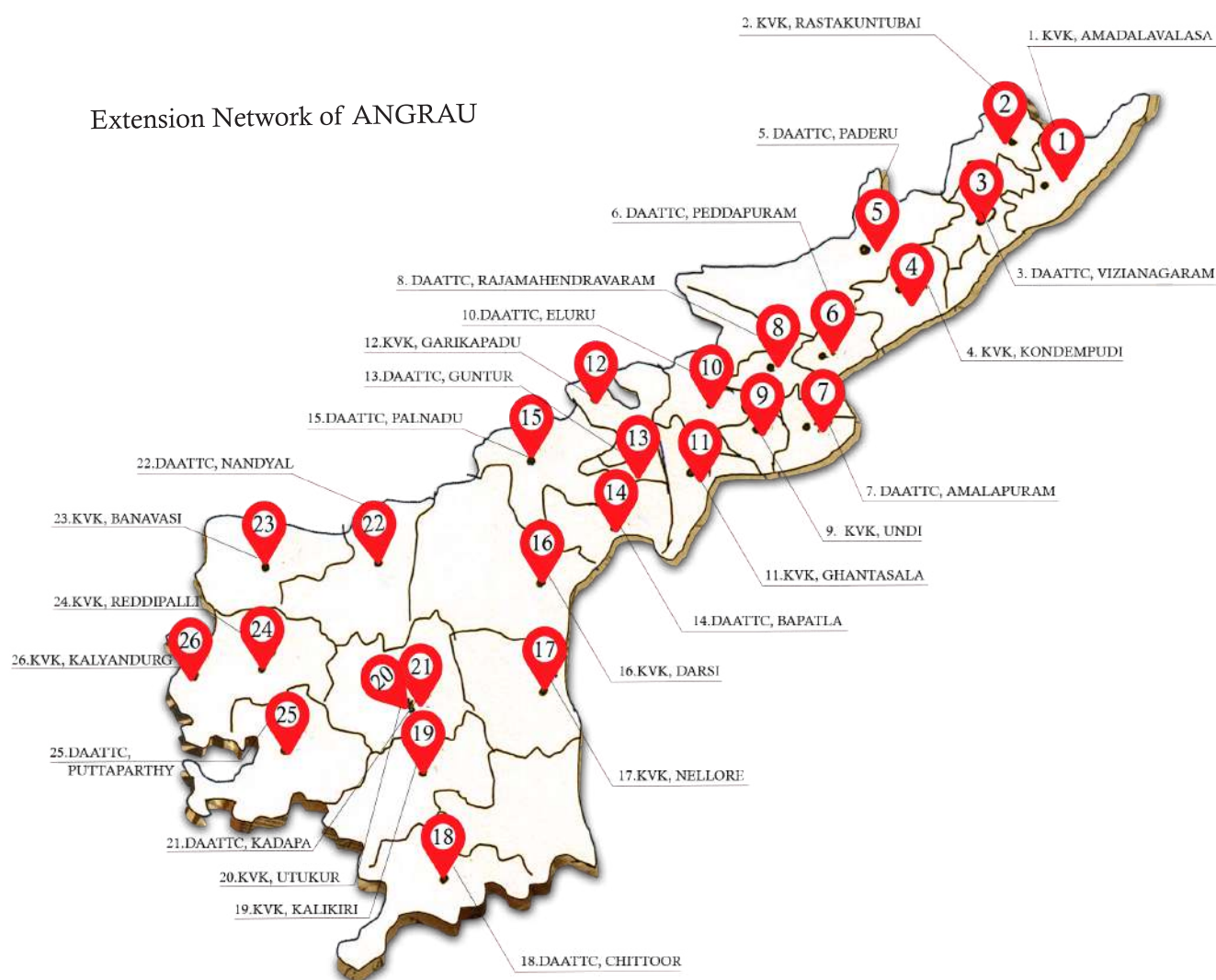
practices, technologies to the farmers through OFTs, FLDs, CFLDs leading to increased crop yields.

- Spread of improved varieties (Minikits, OFTs, FLDs, etc.,)
- Spread of IPM, ICM, organic farming etc. in various crops.
- Spread of effective insecticides, fungicides, weedicides and rodent management techniques, non-insect pest management techniques etc.,.
- Popularization of different systems of rice cultivation like DDS, WDS, MSRI, Aerobic rice, zero tillage maize, jowar, ragi and sunflower etc.
- Fertilizer schedules of different crops based

on agro-climatic zone and cropping system wise.

- Farm implements like combine harvester in rice, seed drill, drum seeder, rice transplanter, anantha planter, sugarcane planter, groundnut and maize threshers, harvesters for pulses, weeders, sundriers, drudgery reduction implements.
- Trap barrier system, solar fence, bird scaring implements including ribbons.
- A total of 3130 no.of minikits of all crops mainly rice, jowar, ragi, bajra, redgram, blackgram, greengram, chickpea, cowpea, horsegram, groundnut, castor, cotton, mesta were conducted in 17424 locations and their performance in different agroclimatic zones was assessed, among these till now

Extension Network of ANGRAU





479 varieties were successfully released for cultivation at State and Central level.

- A total of 4704 technologies were tested in On Farm Trials in 20541 locations covering field crops, horticultural crops, animal husbandry/fisheries and home science that included varietal evaluation, integrated nutrient management, integrated crop management, integrated pest management, integrated disease management, weed management, cropping systems, integrated farming systems, resource conservation technologies., Farm Machinery and implements in agriculture ; Diagnosis and Management, Nutrition management in Animal Husbandry; Aquaculture and Home Science wings.
- A total of 5766 FLDs were organized by KVKs and DAATTCs in 17026 ha covering cereals, millets, pulses, oilseeds, commercial crops, fodder crops, vegetables, fruits, flowers, spices, plantation crops, medicinal plants, farm machinery, animal husbandry, aquaculture and home science.
- A total of 5911 ha area was covered by organizing cluster Front line demonstrations on pulses, viz., redgram, greengram, blackgram and bengalgram and a total of 4548.5 ha area under oil seed crops, viz., groundnut, sunflower, safflower, sesame, castor and niger in cluster approach in interior areas benefiting small, marginal farmers and weaker sections.
- Improved seed varieties released and notified by central varietal release committee within the past 15 years were provided as critical input for conducting demonstrations. Integrated Crop Management practices like bio-fertilizers, bio-pesticides were facilitated for getting higher net returns.

Adoption of modern farming technologies

- Extension programmes like training programmes organized to promote the adoption of improved farming practices such as ICM, INM, IPM leading to enhanced farm profitability. Various capacity building programmes viz., training programmes, skill training programmes, vocational training programmes, field days and Rythusadassus were organized to build the capacity of

clientele groups covering crop production and protection technologies of field and horticultural crops, home science and fisheries by DAATTCs, ESs and KVKs. A total of 5112 training programmes were organized with the participation of 278989 Extension functionaries, 26801 trainings to 1064591 farmers/farm women.

- One of the important mandates of Krishi Vigyan Kendra's is to organize vocational training programmes for self-employment. The KVKs of ANGRAU together organized 1424 vocational training programmes for the benefit of 37946 participants in the areas of



nursery management in horticultural crops, scientific bee keeping, value addition to millets, scientific rearing of sheep and goats, IFS, preparation of vermicompost etc. A total of 4515 other training programmes with 244468 participants were organized on productivity enhancement of crops, soil health and fertility management, Integrated Pest and Disease Management, Resource Conservation Technologies including Drone technology, Beekeeping, Mushroom production, seed production at farmer level to increase farmer's net income, commercial production of vegetables, processing and value addition of millets, livestock production and management and protective cultivation.

- Periodic diagnostic field visits during the crop season and providing timely advices to overcome the constraints and maladies identified were the most important activity of the DAATTCs, KVKs and Extension Specialists. Till now a total of 57224 diagnostic surveys were undertaken in different districts of Andhra Pradesh.

Poverty alleviation

Extension services of ANGRAU support poverty alleviation efforts by conducting special programmes to SC and ST Communities. Under Scheduled Caste Sub-Plan, with an aim to provide physical and financial security to the members of the Scheduled Caste for upliftment and livelihood, various activities were taken up by KVKs to improve the socio-economic conditions, reducing poverty and unemployment in the operational area and include technology assessment, FLDs, capacity building programmes to farmers, rural youth and physical assets/micro-enterprises creation for income generation. Till now 143879 no. of farmers were benefitted through this programme.

Tribal Sub-Plan was implemented with an aim to provide physical and financial security to the members of the tribal areas against any kind of oppression and exploitation. Activities were taken up by KVKs to improve the socio-economic conditions, reducing poverty and unemployment in the operational area and include technology assessment, FLDs, capacity building programmes to farmers, rural youth and physical assets/micro-enterprises creation for income generation. Till now 159511 no. of tribal farmers were benefitted through this programme.

Rural Development

Extension Service of ANGRAU support rural development initiatives by providing technological assistance, training programmes to rural youth etc.,. ARYA project launched by Agricultural Extension Division of ICAR during March, 2015 aims to create interest and confidence among rural youth in agriculture by demonstrating the potential of enterprises based on agriculture and allied sectors to be profitable and reliable sources of livelihood in rural areas. The main objectives of the project are to attract rural youth to take up various agriculture, allied and service sector enterprises; to enable youth to establish network groups to take up capital and resource intensive activities like processing, value addition and marketing and to demonstrate linkages with different stakeholders for sustainable development of the youth. Through this programme 3305 trainings were provided, which led to establishment of 184 own units by rural youth.

Sustainable agriculture

Soil Health Management (SHM) is one of the most important interventions under Nation Mission on Sustainable Agriculture (NMSA) aims at promoting Integrated Nutrient Management (INM) through judicious use of chemical fertilizers including secondary and micro nutrients in conjunction with organic manures and bio-fertilizers for improving soil health and productivity.



Under the scheme, soil health cards are issued to farmers with crop-wise recommendations of nutrients and fertilizers required for the individual farms to help farmers to improve productivity through judicious use of inputs. All KVKs of ANGRAU had analyzed 91043 soil samples with the Soil Testing Laboratories (STL) and Mini Soil Testing Laboratories. A total of 90627 soil health cards were distributed.

Supply of quality seed and planting material

One of the responsibilities of the KVKs is to act as resource centre for supply of quality inputs required by the farmers. Till date 58,329 quintals of quality seed worth Rs.255061344/- and 7813927 quality planting material worth Rs.10141491/- was produced and supplied to farming community.

Digital Extension

Several web based mobile applications were developed and kept for downloading by the farmers and others interested in agriculture free of cost from Google play store. All the technical information was uploaded in the applications for providing upto date information. The applications



developed/ supported from ANGRAU are

- **ANGRAU Pasuposhan:** App developed by KVK, Banavasi, Kurnool district during 2018. It provides information on livestock covering cattle management, sheep and goat rearing, poultry (Layer & Broiler), strategies that help in doubling farmers income, best management practices and technologies along with good quality pictures. With a rating of 4.0/5 and 500+ downloads.
- **Fertilizer Calculator:** App developed by KVK, Banavasi, in the year 2019. The app “Fertilizer Calculator” application was developed for the benefit of the farming community as well as for academicians, scientists, extension personnel, students of undergraduate and postgraduate and input dealers in agriculture and other stake holders engaged in agriculture sector. Currently it has a rating of 4.0/5 and 5000+ downloads.
- **ANGRAU KVK Banavasi CFLDs:** App developed by KVK, Banavasi in 2018 to cater the information needs of CFLD farmers on crop production, varieties, plant protection and marketing information pertaining to pulses and oilseeds with pictures. Currently, it has a rating of 4.9/5 with 1000+ downloads.
- **Krishi Vigyan:** Developed at KVK, Amadalavalasa in 2016 to provide information on complete package of practices for rice, blackgram, greengram, coconut and maize in telugu with photographs, video clips with additional feature of telephone directory of research & extension centres of ANGRAU and call centre. Currently, it has a rating of 4.2/5 with 10000+ downloads.
- **Farm Radio** – www.farmradio.in: Farm radio is the first of its kind online radio initiated by DAATTC, Anakapalle of ANGRAU. Farm radio gives freedom to pod cast what you want and when you want it, with better sound quality to listeners. The services of farm radio to the farmers include ready availability of audio files (podcast) of ICM in groundnut, pests and diseases of rice, maize, sugarcane, cotton and apiary were made available.
- **Other Extension activities:** The farmers were imparted knowledge on various

practices through 5135 TV programmes and 3777 Radio programmes. For faster dissemination of information 583 whatsapp groups were created, through this 270187 text messages and 15018 voice messages were sent to farmers and extension workers of line departments. 1985 Field days covering 92106 participants; 8958 no.of method demonstrations benefitting 130946 farmers; 1798 result demonstrations benefitting 21126 farmers were conducted as a part of mass communication efforts. The Acharya N.G. Ranga Agricultural University has been organizing Kisan melas at various research stations and colleges throughout the state to create awareness and to educate the farmers about latest farming technologies and development. Kisan melas provide an opportunity to gain first hand information on the latest technologies, live demonstrations, informative agricultural exhibitions, interaction with the scientists, input agencies and inculcate the habit of visiting research stations frequently for exposure and timely advices. Till date 748 no.of Kisan melas were organized, with the participation of more than 5,11,906 farmers.

Enhanced linkages with line departments through convergence activities

Linkages with RSKs: The Government of Andhra Pradesh has established 10,778 RSKs to offer service to farmers at their doorstep. The RSKs are playing an important role in providing quality seed and fertilizers and also conducting e-crop booking for every crop. The Assistants who are working at RSKs should know the latest technologies in agriculture and allied sectors for working effectively at field level. ANGRAU has set up an effective and dynamic research and extension system in Andhra Pradesh for catering the needs of Extension Functionaries and farmers. In this direction ANGRAU has conducted different programmes for VAAs of RSKs.

- **Capacity building programmes:** From 2020, 2389 training programmes were organized with the participation of 86,265 RSK staff including VAAs and VHAs on productivity enhancement of crops, soil health and

fertility management, integrated pest and disease management, resource conservation technologies including drone technology, beekeeping, seed production at farmer level to increase farmers net income, commercial production of vegetables, processing and value addition of millets, livestock production and management and protective cultivation. These trainings were imparted to upgrade knowledge and skills of RSK staff.

- *Diagnostic field visits:* The changed climatic conditions, cropping pattern and varietal distribution influence the biotic and abiotic stresses on crops. Hence, there is a need to monitor the fields continuously for timely identification of the problem to initiate mitigation measures to reduce the crop loss and input wastage. A total of 3,475 diagnostic visits were conducted benefiting 73,806 staff of RSKs and farmers for last three years.
- *Polambadi:* Farmers Field School (FFS) is a group based adult learning approach that teaches farmers how to experiment and solve problems independently. During last three years, ANGRAU has taken massive steps in popularizing FFS among 32,926 VAAs and farmers by covering 2,828 RSKs. Polambadi is like a hands on training to the farmer for adopting best management practices in the way of correct identification of insect/disease/weed/deficiency symptoms to take appropriate control measures, to understand the role of bio-agents, field condition, crop and pest sensitive stages.
- *Interaction Programmes:* A total of 2038 Scientist-Farmer-RSK interaction meetings were conducted benefiting 47053 RSK staff.
- *Other Extension Activities:* Social media tools such as WhatsApp offer new form of disseminating farm extension information. ANGRAU has created 1330 whatsapp groups, 54,254 VAAs have been covered through these WhatsApp groups and other digital platforms. Mandal wise agro-met advisory bulletins (twice in a week), are being provided to VAAs through mobile apps and messages.
- *Field days:* A total of 216 field days were organized at 960 RSKs to show the results of field implemented technologies.
- *Scientist's participation for content recording in RSK Channel:* RSK Studio and Channel at Integrated Call Center, Gannavaram were maintained by Department of Agriculture with the support of Agriculture, Horticulture and Veterinary Universities to provide timely solutions to field level problems. A total of 264 no. of Programmes recorded and broadcasted with Scientists of ANGRAU.
- *Linking of RAWEP Students with RSKs:* Rural Agricultural Work Experience Programme is a part of Academic activity to B.Sc. (Hons.) agriculture students, during this period 2009 no. of students surveyed 4,022 RSKs activities to learn the ground level extension and farmer welfare programmes through Department of Agriculture.

Disaster management and Climate Adaptation

Extension Services of ANGRAU promote climate- resilience agricultural practices and technologies to help farmers for adaptation to climate change variability, and extreme weather events. ICAR entered into a Memorandum





of Understanding (MoU) with Indian Meteorological Department (IMD) for setting up of District Agro Met Units (DAMUs) under the Gramin Krishi Mausam Seva (GKMS) in 660 districts of the country to receive weather data from IMD and Automatic Weather Stations to be established at each DAMU to prepare and disseminate block level weather forecast for next five days, Agril. Sub Division and District Level Agro-Met Advisory Bulletins. Under ANGRAU, DAMU unit was established in seven (7) KVKs viz., Amadalavalasa, Rastakuntubai, Garikapadu, Darsi, Nellore, Utukur and Banavasi with SMS (Agromet) and Agromet Observer and these units are under operational since October, 2019 to 2023.

DAMU Units issue Experimental Block Wise Agromet Advisory Bulletins (containing weather forecast for next five days and location & crop specific weather based Agro Advisories for different crops in Agriculture, Horticulture, Animal Husbandry, Fisheries for their respective district in both Telugu and English languages by using Agro-DSS platform on every Tuesday and Friday and the same bulletins were disseminated to the farming community through different communication channels like m-Kisan Portal, AKPS Portal, Farmer WhatsApp Groups, emails to Line Department Officials, Local Extension Functionaries (RSKs), Print and Electronic Media, AIR, uploading in KVK and IMD websites, Reliance Foundation Information Services and by attending farmers' Phone Calls etc. Through this programme 35086 text messages, 4011 voice messages were sent through 372 whatsapp groups covering 1049511 farmers.

NEW INITIATIVES

Annapurna Krishi Prasar Seva (AKPS):

An Interactive Information Dissemination System (IIDS) is an integrated model to address the problems of farmers by using ICT applications. IIDS is a Web, Mobile and IVRS based application, where the farmers are required to be registered with their farm and other details. The expert would provide the personalized solutions based on the inputs provided by the farmers and his available farm profile. There is a

mobile (Toll free No. 1800 425 3141) interface at front end and web interface at the back end. Data will be transmitted through voice, text, images and videos from both ends (farmer to expert and back) i.e. it would allow farmers to send images / videos of the field along with their queries by using a smart phone.

The model is operational in all 13 districts of Andhra Pradesh through eight KVKs and five DAATTCs (KVKs – Nellore, Amadalavalasa, Utukur, Reddipalli, Darsi, Garikapadu, Undi, Kalikiri and DAATTCs – Kurnool, Guntur, Vizianagaram, Kakinada, Anakapalle) since 2016-17.

Benefits to the farmers through IIDS:

- Farmer can get personalized advice on Agriculture, Horticulture, AH and Fisheries from their respective KVK / DAATTC on Toll Free number (1800 425 3141).
- Farmer can record their queries 24x7 through Toll Free Number.
- They can get SMS alerts on raised query and solved queries from their respective KVK / DAATTC.
- Farmers can receive Text & Voice messages in Telugu on their mobile from the respective KVK / DAATTC.

Kisan Mobile Advisories (m-Kisan Portal)

To determine the latest information, knowledge on weather, market prices of various commodities, livestock and crop-based technologies to the farmers, Kisan mobile advisories were given by KVKs through text and voice messages.

Village adoption programme

To ensure optimum development of the villages, and increase of agricultural production, APAU implemented the Village Adoption Scheme under the Prime Ministers new 20-point programme from June, 1982. Every major and medium research stations and the colleges have each adopted a village for its overall development. Besides conducting on-farm research, attending to malady-remedy analysis, monitor and forecast pests, diseases, nutritional disorders, the scientists and teachers of agriculture, animal husbandry,

horticulture, fisheries and women in agriculture, help them to get quality inputs of seeds, pesticides, fertilizers, arrange credit through banks and co-operatives, improve literacy and render assistance in maintaining better sanitation and health and ultimately in the overall economic development and upliftment of the people. In other words, the University teachers and scientists serve as guides to the farming community in the adopted villages.

Student READY (Rural Entrepreneurship Awareness Development Yojana)

The DAATTCs and KVKs have been involved to guide the B.Sc. (Hons.) (Ag.) final year students of Agricultural Colleges to provide practical training and experience for one semester by keeping them in villages and through allotment of one host farmer through RSKs to each student.

Reach Every Panchayat

Reach every Panchayat is a unique programme formulated and implemented by ANGRAU with a goal of reaching every Panchayat of the state to disseminate improved technologies developed by the University. One key informant farmer is identified in each Panchayat who will influence other farmers' decisions in farming. The Key Informant Farmer along with Sarpanch of the Panchayat are trained and oriented with the best

management practices, critical interventions for increasing the productivity of major crops grown in that area, awareness on government schemes and ICT applications.

They were provided with prestigious publication of the University Farmer's Almanac 'Vyavasaya Panchangam' and subscription to 'Vyvasayam Telugu agriculture magazine published by the University to place them in the village Panchayat library to facilitate their access to the farmers in the village.

Flag method of extension:

The DAATTC / KVK scientists during their field visits, visit the road side / nearby farmer's fields and the yellow / conspicuously visible 'Flag' labelled with Name of the Centre, Contact no, Date of visit, Crop, Problem identified and Remedial measures, is placed in the farmers field with the help of a twig / stick / support of plant material at a strategic point to be visible to the farmer.

Whenever the flag is seen by the concerned farmer, he / she reads the message written on the flag, he / she can take instant action based on the recommendations. If the farmer requires any clarification, he / she may call on the Scientists / Extension functionality and clarify their doubts. In this way the Flag method not only provides





immediate solution to the diagnosed field problem even in the absence of the farmer, but also brings awareness and build up rapport with the Extension Scientists of ANGRAU eventually strengthening the Scientist – Farmer linkage.

Developing Farmer Master Trainers:

In order to enrich knowledge, skills and attitude of the farmers in a focused way, on a selected crop, an initiative called Farmers master Trainings were introduced in ANGRAU during 2011. It is the process wherein an identified 15-20 farmers selected from different villages spread over 2-3 Mandals of a district, are being provided training (knowledge & skills) at critical stages of the identified crop.

The training is staggered over the crop season to the same farmers who will be exposed to technologies at different critical stages of crop cycle, (4-5 trainings of 1 day duration) facilitating the Farmers as Master Trainers.

Once they have developed mastery over the crop selected, they are in turn used as Resource Farmer for training other farmers of their locality.

Innovative Farmers Network (IFN) :

The innovative farmers network was initiated by ANGRAU in 2012. One innovative farmer among the five farmers felicitated by the DAATTC during the Foundation Day Celebrations was identified as Coordinator of the Innovative Farmers Network. The coordinators of the network were provided with technology support by the DAATTCs and KVKs to update their knowledge and skills, who in turn need to share their skills and knowledge to other farmers of the network (30 members) in the district. The main objective of this network is to promote farmer to farmer extension.

Farm Science Clubs:

Krishi Vigyan Kendra, Rastakuntubai has been conducting “Farm Science Clubs” as an innovative extension methodology. Farm Science clubs were initiated in the tribal villages with a main objective of providing student mediated extension services to the tribal farming community for transfer of technology and reaching the unreached. High School and College students (Science group) are formed into clubs and were given orientation and other activities to encourage and motivate

them to take up agriculture in future. These Farm club members in turn disseminate knowledge to the farmers in their villages and families. The activities include:

- Fortnightly interaction on recent agricultural technologies
- Distribution of agricultural information material
- Organization of guest lectures to the members on topics related to agriculture and allied sectors.
- Organization of quiz & essay writing competitions on important days.

Tribal Youth Networks:

Another initiative taken up by Krishi Vigyan Kendra, Rastakuntubai include “Tribal Youth Networks”. Tribal Youth were formed into groups and conducted capacity building programmes. The main objective of tribal youth network are:

- To empower & educate the tribal youth on farm activities.
- To make them as change agents for transfer of technology in remote areas.
- To promote agriprenuership among tribal youth.
- KVK facilitates these groups by establishing linkages with the line departments.
- These groups actively take part in various welfare and developmental activities at village and mandal level.

Pocket Cards:

An innovative low-cost extension methodology in transfer of technology was introduced by the KVK, Garikapadu. The critical crop interventions were published on a single small pocket card of size 3” X 4”, printed in multi colour on either side highlighting the technologies impacting the productivity with attractive pictures. Its smartness, farmers had shown interest in possessing them and to keep them for reference.

Agricultural Technology Hub (Ag Tech Hub) at RARS, Tirupati

An ICT initiative in RARS, Tirupati was initiated on 16-03-2016 (on Kisan Mela Day) for providing mobile based agro advisory services through

mobile voice calls, SMSs, existing social media networks like WhatsApp. For this purpose a smart phone and a BSNL mobile connection bearing number 9441670829 was taken and made popular among the farmers in the Southern Zone. Three WhatsApp groups were created each for one district in the Southern Zone and agro-advisory services are being providing.

Partnership activities of ANGRAU

Reliance Foundation: Since its inception in 2013, the Reliance Foundation Information Services (RFIS) programme closely working with ANGRAU with aims to provide critical information and linkages using various communication media to poor households. Information is disseminated through audio and dial out conferences, local cable TV, Live TV Phone in programmes, TV Scrolls Daily basis-Agro weather News Bulletins, voice advisories and text SMS, Jio Chat, WhatsApp and field based programmes and trainings. These enables expertise farmers to make better decisions in areas of livelihood, health and disaster preparedness. Themes covered on broadcasts include agriculture, horticulture, fisheries, health, employment, micro –enterprises and skill building.

SERP under APRIGP: In order to upgrade the knowledge and skill of members of the FPOs assisted by the Society for Elimination of Rural Poverty (SERP), the University had entered MOU with SERP and implemented the project entitled “Collaborative strategies of ANGRAU-SERP” in enhancing the livelihood of small and marginal farmers, Nutri & Hygiene entrepreneurship promotion in Andhra Pradesh” under Andhra Pradesh Rural Inclusive Growth Project (APRIGP).

Farming Systems for Nutrition with MSSRF, Chennai: FSN is a model that entails mainstreaming the nutrition dimension design of the farming system based on locally available crop and animal husbandry resources and extinct farming practices. The FSN model envisages developing and demonstrating a sustainable framework of farming to improve nutritional outcome that can be used for up scaling and wider adoption. MSSRF has been engaged in advocating the FSN approach in three KVKs (Reddipalli, Undi & Rastakuntubai) under

ANGRAU, Lam, Guntur.

Distance Education:

ANGRAU is one of the few Agricultural Universities in the country to start distance education through a private TV channel, ETV under “Annadata – Velugubata” programmes from 2nd October, 2018, twice a week, Tuesday and Friday. In the wake of WTO and highly diverse micro-farming situations present in the state, in order to exploit the role of electronic media to educate the farmers on efficient use of inputs in sustainable and export oriented agriculture, post – harvest handling, market information etc., an Electronic Media Wing was established during 2001 to promote e-extension.

Kisan Melas / Exhibitions / Fairs

University is organizing Kisan Melas at Station / District Level, Zonal Level and State Level as regular events every year, in addition to exhibitions and fairs. South Zone Agri Expo-2015 was organized during 19-21 December, 2015 at Regional Agricultural Research Station, Lam, Guntur. From 2021 onwards, State level Ag.Tech (exhibition & conference) is being organized in December.

The extension services of ANGRTAU are being through the following extension centres.

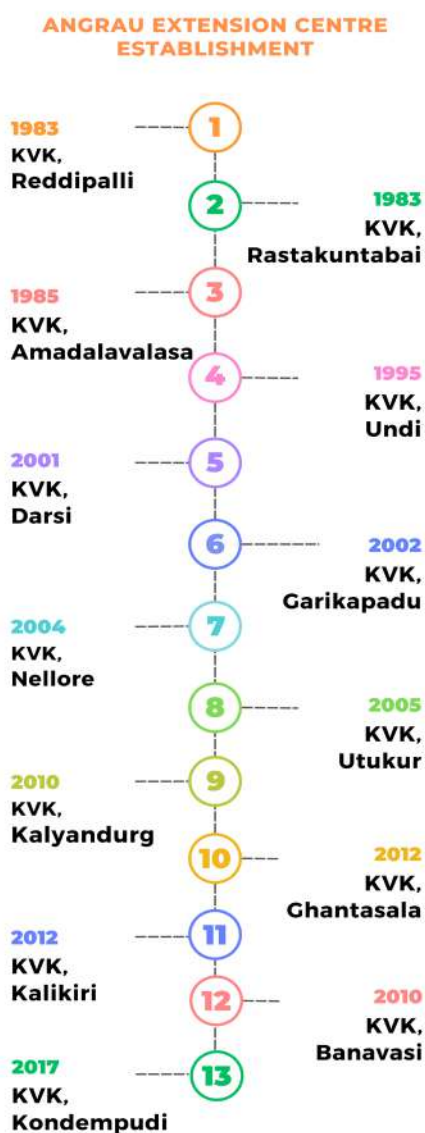
- Krishni Vigyan Kendras (KVKs)
- District Agricultural Advisory and Transfer of Technology Centres (DAATTCs)
- Extension Units in RARSs / ARSs
- Agricultural Information & communication Centre (AI& CC)
- Electronic Wing (EW)
- Farmers Call Centre (FCC)





KRISHI VIGYAN KENDRAS (KVKs):

ANGRAU has a network of 13 Krishi Vigyan Kendras established across the state to support agricultural development and rural livelihoods. *The first KVK was established in 1983 at Reddipalli of Ananthapuram District.* These KVKs are actively involved in providing knowledge and skill training to the farmers, rural youth and field level extension workers, On-Farm Testing and Front-Line Demonstrations of major agricultural technologies with location specific environment. ANGRAU is administering 13 KVKs sanctioned by ICAR spread across the 12 districts in Andhra Pradesh.



DISTRICT AGRICULTURAL ADVISORY AND TRANSFER OF TECHNOLOGY CENTRES (DAATTCS):

To give technological back up and end support & capacity building to the extension personnel of the line departments, ANGRAU started concept of District Agricultural Advisory and Transfer of Technology Centers (DAATTC) and these centres are popularly called as “Eruvaka Kendralu” in Telugu. This kind of initiative is the first of its kind in the country, State Agricultural University starting one DAATTC per district located in the District Head Quarter, consisting of multi-disciplinary scientists with the following objectives:

- To Develop Database of the District:
 - Farming situation wise, mandal wise cropping plans were prepared for the district which helps the farmers and extension workers in developing cropping plans based on soil and water requirement. Preparation of Contingency crop plan.
- Technology assessment and refinement: To assess and refine technologies generated by the Research stations for suitability to different farming situations in the district.
- To conduct Diagnostic Surveys periodically: To identify field problems and provide suitable solutions in the field itself to the farmers, where scientists of ANGRAU and Officers from Department of Agriculture and Horticulture are involved.
- To organize and participate in Kisan Melas, Rythu Chaitanya Yatras, Polam pilustondi, Chandranna Rythu Kshetralu, Rythu Sadassus and organizing exhibitions
- To organize training programmes to Extension functionaries and practicing farmers and participate in training programmes organized by the line departments as resource person.
- To maintain an information center at DAATT centre with need-based information materials and audio-visual aids
- To render Agro- advisory services to the farmer visiting to the centre.
- To develop linkages with all the line departments, NGOs working for promotion of Agriculture in the district.
- To Coordinate with AIR, TV and print

media for dissemination of information.

- Development of literature and extend technical support to department of agriculture and other line departments

Presently, 13 DAATTCs are functioning in Andhra Pradesh covering entire State, located either in District headquarters or Regional Agricultural Research Stations/Agricultural Research Stations with a multidisciplinary team of Scientists mainly consisting of Crop Production, Crop Protection and Agricultural Extension.

The DAATTCs are meeting the farmers needs and in convergence with department of agriculture, line departments and NGOs from time to time. The one of the major activities of DAATTCs is to assess and refine technologies starts with testing the advanced lines of crop varieties in minikits to assess its performance in different field conditions in all agro-climatic zones.

After bifurcation of the Andhra Pradesh State from Telangana in 2015, as per the district reorganization act of 2022 in the State of Andhra Pradesh the 13 DAATTCs were reorganized in a way to distribute one Extension Center per district to scatter the transfer of technology uniformly.

AGRICULTURAL INFORMATION & COMMUNICATION CENTRE (AI&CC):

The Agricultural Information and Communication Centre (AI & CC) was established in the year **1969** with the mandate of disseminating agricultural information to the farmers and extension personnel through print and electronic media. It is providing information support to the various activities organized by the University since its establishment. This centre is responsible for processing of latest agricultural information generated by the university and transfers it for the benefit of end users in the state through various publications and media combinations. The centre publishes various research and extension publications both in English and Telugu, besides sending news bulletins regularly to All India Radio.

Post bifurcation of the University, the AI&CC was established in February, 2016 at Guntur. This centre has successfully initiated and

streamlined the information dissemination through Publications such as The *Vyavasayam* monthly Telugu magazine, The *Vyavasaya Panchangam*, The Journal of Research ANGRAU and ANGRAU E- Newsletter. During January, 2018 the Electronic wing and Farmers Call Centre were also merged with AI & CC making it one-stop-centre for all types of information & communication needs

Historical milestones & Achievements:

- 1969: Vyavasaya Panchangam, a farmer's almanac in Telugu with package of practices of major crops (based on ZREAC recommendations) and technologies recommended by the University was initiated. A total 55 volumes were published till date.
- 1973: The Journal of Research ANGRAU publishing peer reviewed articles of agricultural sciences, horticulture, home science, agricultural engineering and veterinary sciences. A total of 51 volumes were published. Presently, a total of 253 life subscribers, 949 annual subscribers were enrolled.
- 1999: Crop diagnostic bulletins publications. Pocket size Multi Coloured Crop Diagnostic Bulletins on the major crops of the state were published with high quality pictures of pests, symptoms of damage, micro nutrient deficiencies along with management practices. The pocket books were revised in 2019.
- 2016: Farmers Call Centre (FCC) is the first and the foremost of its kind established by ANGRAU in the history of Indian agriculture with an innovative idea of transferring novel scientific technology in Agriculture to the farming community. FCC is accessible to all the farmers of Andhra Pradesh on toll free number 1800 425 0430. After bifurcation of the State, Farmers Call Centre was initially established on 18.10.2016 at Regional Agricultural Research Station, Lam, Guntur to answer the queries raised by the farmers related to agriculture & allied sectors. So far, a total of **26,386** calls were received from the farmers of 13 districts of the state of Andhra Pradesh as well as Telangana and other parts of the



country.

- 2009: Vyavasayam monthly magazine in Telugu, with latest information and technologies in agriculture, horticulture, agricultural engineering and veterinary sciences was initiated. A total 15 volumes were published. Presently, 701 life subscribers and 6906 annual subscribers are enrolled.
- 2017: ANGRAU E- newsletter, In-house magazine for visibility of university activities across India was started. The e-newsletter is being uploaded in the ANGRAU website. A total of 8 volumes were published.
- Short videos: Electronic Wing as a part of the AI&CC has prepared short videos on various aspects of agriculture and allied sectors. A total of 35 short videos, 8 DVDs and 3 success stories were developed so far.
- Advisories through Print & Electronic Media: In collaboration with state level print & electronic media, a total of 322 weekly advisories were sent and 707 Resource Persons were deputed to give on time advisories to farmers on agriculture, agriculture engineering and allied fields.

OPEN AND DISTANCE LEARNING CENTRE

Acharya N.G.Ranga Agricultural University being a pioneer University of the country in imparting Agricultural education is expanding its wings with the aim of reaching the unreached. Considering the potential and the future of Open and Distance Learning, the Centre of Open and Distance Learning (ODLC) was established in the year 2018 with the major aim being to transform ANGRAU from its formal educational system to a dual and convergent mode, by

adopting appropriate systems of ODL and ICT (Information & Communication Technology) so as to provide Agricultural knowledge and entrepreneurial skills for self-employment and income generation.

Establishment of Open Distance Learning Centre under the Faculty of Agriculture, ANGRAU was vested with the responsibility of offering online Distance learning programme in hybrid mode through certificate courses for the benefit of various segments of the farming community, entrepreneurs, Self-help groups, students and other learners who aspire for knowledge in Agricultural education and Self-employment. In a span of 5 years, ODLC has offered Certificate courses to 40 batches in various subjects

The certificate courses of 2 months duration will be offered in local language telugu with 8 weekly online sessions followed by one day practical session at the chosen study centre for experiential hands-on learning. The course syllabus printed in a book form will be made available to the registered candidates via post. An online exam will be conducted post the sessions to assess the eligibility of the candidate for receiving certificates. Till date, a total of 3851 candidates enrolled for the courses and 3039 successfully completed the courses and received ANGRAU certificates.

MOOCs courses on Organic Farming (in Telugu), Mushroom Cultivation (in Telugu), Terrace Gardening (in Telugu), Sericulture, Biofertilizers-Production and Management, Bee Keeping (in Telugu), Millets-Production, Promotion and Value addition, Vermicompost, Production and organic formulations, Biopesticides and Bio-stimulants and Seed Production are being presently offered from ODLC.





