

SALIENT ACHIEVEMENTS OF AGRICULTURAL RESEARCH STATION, GARIKAPADU

Rice :

- Studies on management practices for late planting situation under NSPLC command area revealed that BPT 5204 variety performed well both under direct seeding and transplanted conditions but, only when sown early. Late sowing/planting resulted in lower yields due to severe blast infection and significantly lower yields were recorded when BPT 5204 was transplanted on 15th September. Whereas, MTU 1010 – a short duration variety recorded significantly superior yield over BPT 5204 under late direct seeding on 15th August and 1st September.
- The rice grain yield data of four seasons revealed that highest grain yield of 6908 kg/ha was recorded with application of 275-80-60 NPK kg/ha followed by the plot which received 200-60-40 NPK kg/ha.
- Normal method of transplanting (7072 kg/ha) recorded significantly superior seed yield as compared to all other methods, followed by direct sowing of dry paddy in prepared soil (6272 kg/ha) However, direct sowing of paddy by drilling with drum seeder (5970 kg/ha) and broadcasting (5747 kg/ha) of sprouted seeds in puddle soil were comparable and recorded significantly lower yield as compared to transplanting.
- Grain & straw yield of rice were not significantly influenced by different irrigation practices viz farmers practice (T1) irrigation at 1 (T2), 3 (T3), 5 (T4) days interval after disappearance of 5cm of earlier irrigation and recommended practice (T5). Water use efficiency was high in T3 and T4 (6.27 and 6.30 kg/ha mm) as compared to 5.05(kg/ha mm) in T5. Lowest efficiency (3.93 kg/ha mm) was recorded under farmers practice. Quantity of irrigation given ranged from 850mm in T4 to 1550mm in T1. It indicates that even with less quantity of water, rice can be successfully grown without significant reduction in yield with a saving in water upto 45%.
- SRI method of cultivation recorded five year average yield advantage of 11.3 q/ha (22%) over recommended practice which is mainly because of more no. of grain/panicle. There was also a saving of irrigation water (102 mm) under SRI over recommended practice
- Weed control in paddy by use of herbicides alone recorded significantly lower grain yield (6023 kg/ha) as compared to combined use of herbicide and hand weeding (6267 kg/ha) and complete hand weeding (6506 kg/ha).
- Nutrient management in rice maize cropping system in NSP left canal command area was conducted. The pooled data that highest maize grain yield of 4363 kg/ha was recorded with plots received 150% RDF with 50% N through insitu green manuring (Daincha) to the preceding kharif rice crop.
- Application of 240 kg N/ha to direct seeded paddy gave 5914 kg/ha of grain yield. However it was on par with 200 kg./ha of nitrogen (5711 kg/ha) and 280 kg N/ha (5761 kg/ha)
- Nitrogen application to direct sown paddy in 4 splits i.e, $\frac{1}{4}$ dose as basal $\frac{1}{4}$ at 30 DAS $\frac{1}{4}$ at maximum tillering and $\frac{1}{4}$ at PI stages gave highest grain yield (6028 kg/ha) and was significantly superior to all other three methods of split application of Nitrogen viz three times $\frac{1}{3}, \frac{1}{3}$ and $\frac{1}{3}$ (5717 kg/ha), $\frac{1}{4}, \frac{1}{2}$ and $\frac{1}{4}$ (5690 kg/ha) and $\frac{1}{2}, \frac{1}{4}$ and $\frac{1}{4}$ (5747 kg/ha) at 30 DAS at maximum tillering stages and PI Stages respectively.
- Studies on site specific real time nitrogen management in rice revealed that highest grain yield of 6703 kg/ha was obtained when nitrogen was applied @ 213 kg/ha in four splits,

- Based on Soil test crop response (STCR) fertilizer adjustment equation value, but was at par with all other treatments of nitrogen application ranging from 120 to 240 kg/ha, applied as per existing methodology or based on SPAD/ Leaf colour chart/ Sufficiency index values. This type of non-responsiveness to increased fertilizer nitrogen may be attributed to cloudiness and more rainfall during the crop season.
- Studies on silica application to rice sown on red sandy loam soils of NSP left command revealed that there is no significant effect of silica on grain yield of rice when applied @200 to 400 kg/ha in 2 splits at different N levels.
- Paddy crop grown with organic package gave 8100 kg/ha of seed and 8700 kg/ha of straw yield during kharif season as against 6200 kg/ha and 7500 kg/ha, respectively with inorganic package after 8 years experimentation.
- No significant response to application of different doses of phosphorus applied to paddy or inoculations with PSB and VAM was observed during kharif, 2012.
- Weed control in paddy by use of herbicides alone recorded significantly lower grain yield (6023 kg/ha) as compared to combined use of herbicide and hand weeding (6267 kg/ha) and complete hand weeding (6506 kg/ha)

Maize :

- During rabi, highest maize grain yield was recorded in 150% recommended dose of fertilizer (RDF) with 50% N through insitu green manuring (Dhaincha) under rice-maize cropping system. Integrated use of organic and inorganic fertilizers to rice resulted in higher grain yield in succeeding maize crop but at par with the in-organic source alone.
- Nitrogen application based on STCR equation targeted for 10 tons/ha for kharif maize gave highest mean grain yield of 6681 kg./ha .(mean of three years).Whereas, N application
- Based on soil test data gave a mean yield of 5737 kg/ha. The recommended dose for kharif maize was 200-26-265 kg/ha of NPK. The soils test values of the experimental area was low in N, medium in p and high for K.
- Highest grain yield of maize under drip irrigation system was recorded with application of nitrogen in 5 splits at 10,30,40,50 & 60 DAS as compared to three, four and six splits.

Groundnut :

- Studies on Groundnut during *rabi* revealed significant difference in pod yield due to irrigation schedules. Highest pod yield was recorded in when irrigation was scheduled at 1.0 IW/CPE ratio (450 mm (9). However, this treatment was on par with treatment where 9 irrigations were given at different growth stages. Lowest pod yield was realized when irrigation was scheduled at 0.6 IW/CPE ratio (300 mm (6).

Redgram :

- Highest yield of redgram (ICPL 85063) was obtained when the irrigations scheduled at IW/CPE of 0.6 which comes to 300 mm in 6 irrigations. However, irrigations scheduled at IW/CPE of 0.4 and irrigations given at critical growth stages (pre sowing) 25 DAS, 45 DAS, flowering and pod development) were also found on par with IW.CPE of 0.6 with the amount water given was 250 mm and 200 mm respectively. Lowest grain yield 868 kg/ha was obtained when irrigations scheduled at IW/CPE of 0.2 (100 mm-2 irrigations).

Chilli :

- Water management in chillies (during post rainy season) grown in alfisols of NSP left canal command area was conducted. The results that scheduling irrigation at IW/CPE of 0.8 was better over others as significantly highest pod yield was obtained. Between irrigation methods,

check basin method proved superior over fixed skip furrow method. There was no interaction effect between methods of irrigation and irrigation schedules.

Cropping systems :

- Among different suitable alternate cropping systems evaluated for rice under NSP Left Canal Command area, Sunflower –groundnut system was found most profitable followed by castor, Redgram + Greengram and sesamum-groundnut. Net profit was lowest with blackgram-greengram system. However, BCR was highest (0.99) in castor followed by sesamum-groundnut (0.82) and Redgram +greengram (0.66).