

New Technologies Developed for Inclusion in Package of Practices during 2018-19

Crop Improvement (2)

Plant Biotechnology (1)

1. **Patch budding technique in Jackfruit:** Latex of Jackfruit poses problems in soft wood grafting hence has low success rate. Patch budding is practically adoptable technique with 60 to 70 per cent success. The root stocks of 2 to 8 months old with a pencil thickness stem gives better success. The scions which are 6 months old and green are suitable for budding. The best season for higher success is February to September.

Seed Science and technology (1)

1. **Management of storage insect through botanicals and their influence on seed quality of cowpea during storage:** Cowpea seeds treated with *Acorus calamus* formulation @10ml/kg of seeds and stored in gunny bag can prevent the storage insect pests of cowpea up to 12 months of storage and seed quality parameters were above minimum seed certification standards. This botanical seed treatment performs similar to that of insecticidal seed treatment so the present technology is an alternative organic seed treatment.

Crop production (8)

Agronomy (6)

1. **Weed Management in Cotton:** Spraying of tank mix which includes quizalofop-P-ethyl (5 EC) 50 g a.i.+ pyriithiobac sodium 10 EC @62.5 g a.i./ha at 2-4 leaf stage + one hand weeding was found effective in controlling weeds besides increasing yield and fiber content (7.14% , 101 kg) of the cotton crop.
2. **Drip Fertigation in Groundnut:** Application of 100 per cent recommended dose of Nitrogen and Potassium through drip irrigation in six equal splits at fortnightly intervals starting from sowing to 75days after sowing increases nutrient use efficiency apart from enhancing pod yield to the tune of 15 to 20 per cent.
3. **Weed Management in Groundnut:** Application of 300 ml of quizalopop-p-ethyl 5 EC OR 625 ml of Sodium aciflurofen @16.5 % + Cladinofofop-proparyl 8% EC (206.25 + 100g a.i./ ha) at 2-4 leaf stage (15-20 DAS) in 200 litres of water resulted in higher yield(1548Kgs/ha), B:C ratio(2.59) and lower weed index (3.4%).

4. **Weed Management in Blackgram:** Application of Sodium Acifluorfen 16.5 % + Clodinafop-Propargyl 8 % EC (206.25 + 100 g a.i./ha) as a post emergent herbicide at 20-25 DAS (2-3 leaf stage of weed) was found to be effective in managing the weeds in blackgram with lower index (8.6%), higher yield (1412 kg/ha) and B:C ratio (2.80).
5. **Weed Management in Cowpea:** Post-emergence application of imazethapyr + imazamox @ 40 g a.i./ha was found effective in controlling weeds, improving seed yield (970-980 kg/ha) and profitability (save labour cost : Rs.2,788/ha) of the rainfed cowpea under labour scarce situations.
6. **Grain Amaranth Chapter for PoP:** A chapter on “Agro-techniques for Grain Amaranth” was included in the supplementary book of POP (Pooraka kaipidi).

Soil Science & Agril. Chemistry (2)

1. **Use of diatomaceous earth and rice hull ash for sustainable development of rice:** Along with the recommended dose of fertilizer as per package of practices application of 300 Kgs da/ha as silicon source enhance the fertility of the soil and increases the yield (10190 kgs /ha straw and 6057/ha grain yield).
2. **Use of Bio-K as an alternative to potassic fertilizers in hybrid maize:** Application of recommended potassium (16kgs/ac) in the form of Bio K @140kgs/ac increases maize yield by 14.3 percent and straw yield by 17.1 per cent.

Crop Protection (7)

Entomology (4)

1. **Management of Diamond back moth in Cabbage:** IPM package can be used for efficient management of DBM in cabbage

Schedule of insecticide application for the management of DBM and other lepidopteran pests in Cabbage

Time of Application	Chemical/product	Dosage
Transplanting time	Mustard	2 rows after 25 rows of cabbage
7 Days after Transplanting	WOTA-T traps (DBM traps)	5 Nos./acre
15 Days after Transplanting	Neem Soap	(10 gm/L)
18 Days after Transplanting	Spinosad 2.5SC	1.25 ml/L
21 Days after Transplanting	Emamectin benzoate 5SG	0.5 g/L
35 Days after Transplanting	Spray of Bt (Dipel)	(1g/L)
50 Days after Transplanting	Chlorfenapyr 10SC	1.5 ml/L
65 Days after Transplanting	Spinosad 2.5SC	1.25 ml/L

80 Days after Transplanting	Emamectin benzoate 5SG	3.5 g/L
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- 2. Chemical control of thrips *Scirtothrips dorsalis* infesting chilli crop:** Spray application of Spinosad 45SC (0.3 ml/lit. of water) at 10 to 14 days interval resulted in more than 80% reduction in the population of thrips and accounted for favourable B:C ratio of 15:1.
- 3. Management of Serpentine leaf miner in tomato:** Spraying of 1.8ml Cyantraniliprole 10.26 OD per liter of water (360 ml/acre) when the incidence of miner is noted effectively reduced the pest incidence by 95 per cent and increased the yield by 6 per cent when compared to present recommendation Imidacloprid-17.8SL and triazophos 40 EC
- 4. Management of shoot and fruit borer in brinjal:** During vegetative stage (Incidence is observed on wilted shoots), spraying chlorantraniliprole [18.5SC@0.3ml/l](#) (60-75ml/acre) and at fruit setting stage, spraying benzoate 5 – 0.4gm/l (80-100gm/acre) effectively controlled the borer to an extent of 95% and increases yield by 59% when compared to presently recommended Malathion 50 EC.

Plant Pathology (3)

- 1. Compost tea (Kashaya) for the management of late blight and higher tuber yield in potato:** Five sprays of Compost Kashaya (Tea) from 25 DAP, distributed as one spray per week, for up to five weeks. One single need based spray of fungicide (1 g/l Dimethamorph + 2 g/l Mancozeb) has to be applied only if disease incidence is noticed. Applying compost tea controls late blight, and enhances the tuber yield significantly (>15 % tuber yield enhancement) and reduces fungicidal application by 80 per cent. This is a simple eco-friendly and economical, technology for improving tuber yield with a C:B ratio of 1:15.
- 2. Management of Fusarium wilt in pigeon pea:** seed treatment with *Trichoderma viridae* @10g/kg and soil application @ 1kg in 200kg of FYM applied in rows at the time of sowing manages wilt with an additional yield of 950kgs/ha and B:C ratio of (3.5).
- 3. Management of mungbean yellow mosaic virus disease in green gram:** Seed treatment with imidacloprid 48 FS @ 5ml/kg seed and one spray of imidacloprid 17.8 SL @0.50ml/l at 20 days after sowing reduces mung bean yellow mosaic virus infection.

Horticulture (1)

- 1. Local crop waste as substrate for oyster mushroom cultivation:** Chopped maize stalk possess higher bio efficiency. It can be used as better alternate substrate for enhanced production of oyster mushroom.