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Module-9

ITK's of Gajapati

CROP - WISE ITK

Cereal Crops- RICE



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- Treatment of paddy seeds in diluted bio gas slurry for 12 hours increases resistance of seedlings to pests and diseases and soaking of paddy seeds in milk increases its resistance against 'tungro' virus and 'stunt' virus.
- Vacha (*Acorus calamus*) powder and cow urine are mixed in the water that has been boiled and cooled over night and the seeds are soaked in the solution. The floating seeds are removed. The remaining seeds are used for sowing. This serves the dual purpose of seed selection and treatment of seed borne disease.
- For control of red leaf spot disease in paddy, the seeds are soaked in 'Pudina' leaf extract (*Mentha sativa*) for 24 hours
- 'T' shaped bamboo stands are placed in many places in the paddy fields so that birds can sit on them and feed on the larvae and adults of rice pests



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- Dhaincha (*Sesbania* spp.) seeds are sown on paddy main fields when paddy nursery is raised and the grown up dhaincha is ploughed in-situ during field preparation.
- Plough the main field for four to six times for better yield. The rice crop will establish better if it is transplanted along the wind direction.
- Farmers use custard apple (*Annonasquamosa*) for pest control in paddy crop. Leaves and seeds of custard apple contain chemicals having insecticidal properties. Insect/pests of paddy crop are controlled by broadcasting leaves or seeds of custard apple.
- The smell of leaves act as repellent, whereas, leaves are toxic in nature to plant parasites. Leaves are used raw, whereas seeds are processed and used as powder.
- ITK to get rid of BPH 7kg rice bran + 1.5 kg jaggery or molasses + 1.5 lit kerosene are mixed thoroughly and placed in plastic glasses in the BPH affected paddy crop. It helps in repelling the BPH population completely. This is for 1 acre.



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MAIZE

- If the sheaths on maize cobs are not removed, they can be stored for more than three months.
- Before sowing, maize seeds are soaked in warm water for 3-6 hours and shade dried to induce better germination and to control shoot borer.
- Maize is sown after tomato in the same ridges and furrows to reduce the cost of land preparation.
- Dried maize stalks are stacked as heap on stone slabs and covered with paddy straw.
- This can be stored for more than a year and used as cattle feed.



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Millets-Pearl Millet

- For bird scaring, the carcass of a crow is hung on a long pole in the center of the pearl millet field.
- When pearl millet seeds are immersed in salt solution (1 kg. of common salt in 10 lit. of water) and the floaters and disease affected seeds are removed.
- Pearl millet seeds are presoaked in water overnight before sowing, for early germination.
- Pearl millet nursery is grown on raised beds for better seedling growth.
- Before transplanting, seedling tips are clipped to remove the eggs of pests and white flies and to control tip blight disease.
- Dusting Chula ash in pearl millet fields to control green leaf hoppers sitting on inner side of leaves.
- Grow cowpea as intercrop to control leaf miner in pearl millet. Storing pearl millet seeds by mixing with ash.



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SORGHUM

- Soak the sorghum seeds in common salt solution before sowing to secure good germination under adverse conditions.
- Soak the sorghum seeds in cow urine for half-an-hour and sun drying them before sowing to control head smut and to induce drought tolerance.
- To ensure quick germination of sorghum seeds and to avoid shoot fly attack, enough water is boiled and kept in an open place throughout the night for cooling.
- In the next day morning prior to sowing, the sorghum seeds are immersed in cold water for some time and sown in the field, which produces better seedlings.



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- Sow cowpea as an intercrop in sorghum to minimize stem borer attack due to its repellent smell.
- Sow lab-lab as an intercrop to reduce stem borer damage in sorghum.
- Pouring neem cake extract drop by drop on the sorghum shoot to control shoot borer.
- Dusting ash on the infected leaves of sorghum to prevent the pest incidence.
- Dusting ash at milking stage to control ear head bugs.
- Growing coriander as a mixed crop in sorghum to control the parasitic weed viz., witch weed (*Strigalutea*).
- A black cloth is tied to a long pole and fixed in the centre of the field to scare away the crows.
- Mixing sorghum seeds with ash to prevent storage pests



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PULSES CROPS- RED GRAM

- Spray the decoction of tobacco waste to control sucking pests and caterpillars.
- Red gram seeds are mixed with red earth slurry, dried and stored to avoid storage pests.
- Castor seeds are fried, powdered and mixed with red gram seeds to reduce pest attack during storage.
- Storing the red gram seeds after mixing them with 'sweet flag' (*Acorus calamus*) powder @ 1 kg. per 50 kg of seeds to preserve them for one year.
- Dry the red gram seeds well and store them in gunny bags after placing dried leaves of 'Naithulasi' (*Ocimum canum*) inside them to prevent pod borer attack. (Also for black gram).
- Putting the pods of dried chillies in the red gram container to control bruchids (beetle) attack.



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BLACK GRAM

- When a wooden plank is moved with pressing over the drying gram, splitting of gram indicates optimal drying.
- Yield will be higher in black gram crop, if it is sown in the second fortnight of September.
- Neem oil is sprayed @ 6 lit./ac. to control powdery mildew in black gram crop.
- Mixing the black gram seeds with ash and storing them in earthen pots for longer period (Also for cow pea and green gram).
- Mixing the black gram with sweet flag (*Acorus calamus*) powder for seed purpose.
- Coating the black gram with castor oil to increase the keeping quality.
- Black gram grains broken into halves will escape from weevil attack during storage.



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CASH CROPS -COTTON

- Coating the cotton seeds with red soil and sun drying them before sowing to ensure good germination and to make the dibbling easy.
- Mixing one kg of cotton seeds with 200ml. of neem oil and paste with fresh cow dung and then drying this overnight before sowing to avoid pests.
- Applying groundnut cake three times during the crop period to promote plant growth and boll reduction. Growing castor as intercrop or cover crop to attract tobacco cut worms.
- Five kg. of neem kernels are powdered and soaked in 100 lit of water for one day and filtered in the next day, diluted, mixed with soap solution and sprayed to control white flies.
- About 600g. of tobacco is soaked in water for 2-3 days, filtered and sprayed to control white flies. Sugar solution and neem oil are mixed with water and sprayed to control mealy bugs.



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SUGARCANE

- Chulah ash is applied 2-3 months after planting to control early shoot borer.
- Neem kernels or neem cake are powdered, soaked in water overnight and the filtrate is diluted and sprayed to control early shoot borer.
- Dried neem fruits are powdered and applied @ 200kg./ha. to control stem borers and fungal diseases.



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FRUIT CROPS -BANANA

- Unripened banana bunches are piled in a vessel and incense sticks are inside the vessel. Then if the lid of the vessel is closed, the bunches will ripen in about 12 hours.
- For quick ripening of banana fruits, lime solution is sprinkled over the bunches.
- For easy ripening of banana, neem leaves are inserted in between the bunches. Diluted tobacco leaf extract is sprayed on banana crop to control leaf spot diseases.
- Banana suckers are immersed for a while in 1 lit. of neem oil dissolved in 100 lit. of water before planting in order to prevent rhizome rot. Ground nut cake is applied to banana crop for better yield.
- To control fruit rot in banana during storage, the fruit stalks are soaked in 10% thulasi (*Ocimum canum*) leaf extract or 1 % neem oil solution and stored.



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- Growing *Sesbania* spp. (trees) as border crop around banana fields to act as a shelter crop in order to prevent the wind damage.
- Neem leaves are put inside a vessel containing banana hands for ripening of fruits. But ripening will take about four days.
- Dried, drooping leaves are removed once in three months to avoid shade effect which may produce black spots on fruits and to reduce wind damage there by preventing lodging.
- One kg each of powdered neem cake and tobacco waste are soaked separately in 5 lit. of water each. In the next day they are filtered and decanted solutions are mixed together in which suckers are immersed before planting to prevent nematode attack.
- To control banana wilt, affected plants are removed and burnt and 1 -2 kg of lime is applied in each pit.



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MANGO

- Neem oil is sprayed to control the hoppers.
- Sunflower is cultivated in between the mango trees to attract honey bees which increase pollination and fruit production.
- To induce early ripening of mango fruits, they are spread on a layer of the branches of 'Aavaram' (Cassia auriculata) plant on the floor and again covered with its branches



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VEGETABLE CROPS- TOMATO

- A decoction of Aloe vera, Ocimumtenuiflorum, and Aristolochia bracteolate is prepared and sprayed on tomato crop to control pests and disease and to reduce flower shedding.
- Twenty ml. of leaf extract of Bougainvillea glabra is mixed with 1 lit. of water in which the tomato seeds are soaked for six hours to control damping off in nursery.
- About 25 - 30 days old tomato seedlings are preferred for planting. Spraying neem oil to reduce flower droppings in tomato. Dissolving Chula ash and cow dung in water and spraying it to reduce flower dropping in tomato.
- Growing marigold as border crop in tomato fields to control nematode attack. Raising garlic or onion as border crop in tomato fields to prevent fruit borer attack.
- Two kg. of neem kernels are powdered and soaked, in water for 10 days after which it is filtered, mixed with water and sprayed for one acre of tomato crop to control fruit borer and thrips.



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BRINJAL

- In order to prevent fruit rotting in brinjal plants, a solution is made of 1 lit. of water and eight crushed leaves of Aloe vera and sprayed on the crops.
- Chrysanthemum coronaries is grown as a border crop in brinjal to control fruit borers.
- Grinding and applying the neem seeds @40kg./ac. on 35th day after transplanting gives higher yield. Growing castor in Brinjal fields as border crop to act as a trap crop for insects.
- Growing onion as intercrop in Brinjal to control many pests including fruit borers.
- Mixing and grinding well neem cake with Aloe vera and soaking in water for 10 days, after which spraying the filtrate to control thrips.
- Ash and turmeric powder are mixed in equal proportion and sprinkled to control aphids.



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FLOWER CROPS -JASMINE

- Every year, FYM is applied or sheep penning is practiced to replenish soil fertility.
- One kg. of oleander fruits is soaked in water for one day after which, they are crushed and extract is taken. Then it is diluted with water for 10 times and sprayed to control all the pests in jasmine.
- Neem cake powder is applied @ 1 50g./plant to control nematodes.



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CROSSANDRA

- To control the root knot nematodes in 'crossandra dried flowers of red oleander (*Nerium oleander*) are mixed with neem cake and applied at last ploughing.
- Neem cake is applied to control nematodes (Also for *Chrysanthemum*).

CHRYSANTHEMUM

- Groundnut cake is powdered and applied to get higher yields and big sized flowers (Also for tuberose).
- Pinching of terminal shoots is done two months after planting to have more branches.
- In case of one day delay for sending to market, harvested flowers are spread on gunny bags, sprinkled with water and covered with white cloth in order to preneut.



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SPICES AND PLANTATION CROPS - PEPPER

- When a sample of pepper is chewed, metallic sound indicates its optimal dryness.
- For producing white pepper, the fruits are allowed to ripen in the climber itself.
- Then they are collected, put in tanks, foot pressed to remove the skins and they are washed with water and dried to produce white pepper which is having medicinal value.



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CARDAMOM

- Cardamom seeds are sown immediately after harvest to get better germination. Seeds, after extraction, are washed well with water for 2 or 3 times to remove the mucilaginous substances, mixed with ash and dried for 2 or 3 days.
- A mixture of neem cake powder and sheep manure is applied @ 200g/plant. □ A mixture of extracts of neem cake and tobacco waste is sprayed to control stem borer and capsule thrips in cardamom.



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BEVERAGES AND NARCOTICS-TOBACCO

- A solution is made of 5 lit. of milk in 100 lit. of water and sprayed after a month of planting for 1 ac. of tobacco crop to prevent tobacco mosaic virus.
- Wider spacing is provided to get more yield in tobacco.
- Neem seed kernel extract is sprayed to control tobacco cut worm.
- Sorghum or gingelly is grown as a trap crop to control broom rape weed (*Orabanchecernua*).
- Spraying putrefied buttermilk @ 50ml. dissolved in 1 lit. of water to control tobacco mosaic.



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COFFEE

- Half a kg of fresh cow dung is dissolved in 15 lit. of water and sprinkled on coffee seedlings at nursery stage for better growth.
- Forming semi circular basins around the coffee plants to conserve moisture.
- Coffee berry borer mostly spreads from one plantation to another through the gunny bags used for transport of coffee beans to curing factories. Hence, these gunny bags are impregnated with neem cake extract and dried before packing.
- To control berry borers in coffee, 3 kg. of neem cake and 6 kg of forest marigold are soaked in water separately for 3 days after which they are dissolved together in 200lit. of water and sprayed for an acre twice with an interval of 15 day.
- Lime is applied to control wilt disease in coffee. Good quality coffee is obtained at third or fourth picking. Disease free coffee plants having good vigor are selected for seed collection.