Technical Protocol

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Agriculture Sustainable Practices

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TECHNICAL PROTOCOL UNDER MKSP

Operational districts under MKSP: Rayagada, Keonjhar and Mayurbhanj

Agro Climatic Zones		North Eastern Ghat and North Central Plateau
Major Crops		Paddy, Maize, Pigeon pea ,chick pea and vegetables
1	**Pre Cultivation**	
	Crop selection	Crop will be selected based on the community suitability and market attractiveness. Priority will be given to identify good local variety.
	Seed selection	Based on the experience and yield potentiality of a particular crop the farmers select seeds. It may be local or Improved resistant variety purchased from market.
	Seed rate	Seed Rate/Requirement : Varies from crop to crop, season of sowing and method of sowing
	Seed Treatment	Seed treatment is done to avoid seed borne diseases, and to enhance germination percentage Seed treatment with **Cow urine/Bijamrita/Trichoderma viridae**.
2	**Soil Health**	
	Organic Matter	Incorporation of more and more organic matter into soil by green manuring and decomposing the crop residue, cow dung, other wastes and organic manure. Green manuring: Sunhemp/Glyricidea Composting: NADEP and Compost pit
	Organic nutrient	Jibamruta
	Crop Rotation/Mixed cropping	Appropriate crop rotation and mixed cropping will be introduced to maintain soil health. Introduction of at least one leguminous crop like pigeon pea, beans, Ruma etc. in the crop rotation
	Soil Treatment	Families will be encouraged to apply lime/Gypsum to reduce the acidity of the soil

		wherever applicable.
	Microbe Population	Introduction of measures to increase microbial population in the soil through applying liquid manure, PSB, Azotobacter etc.
3	**Land and water management**	
	Soil Erosion	As in rain fed condition water plays a critical role for enhancing fertility of the soil and plant growth. Various in-situ soil and water conservation measures like 5 % model, 30X40 will be done in an Integrated Natural resource management approach.
	Drainage	Proper drainage in low lands for better aeration and root growth by constructing drainage line in between plots and around the plots
	Availability of Water	Water harvesting structures like well, Lifting water from canals/rivers will be done to increase assurance of water to crop.
4	**Agronomic Practices**	
	Sowing/Transplanting	Early sowing/transplanting will facilitate longer vegetative growth and fewer incidences of insect and pest.
	Intercultural operation	Timely weeding, both manually and mechanically(Cono & Mandua weeder),Khurupi , weeding as per crop requirement and weed intensity
5	**Non Pesticide Pest Management**	
	Agronomic Practices	Use of resistant variety and adjusting time of sowing will be practiced to reduce pest population below ETL level
	Preventing pest attack	Use of **Handikatha, Agenyastra, Brhmastra as organic pesticides** will be encouraged as prophylactic measures Application of bio pesticides like Neem based pesticide, Abasin, Vertimake etc. will also be used along with parasitoids (biological controls) namely trichogramma and bracon.

		Summer ploughing, use of pheromone traps, bird perches, regular bund cleaning etc will be facilitated to reduce early growth of pests and disease in plants. However in any case, the pest outbreak does not come down, low molecular pesticides will be used to save from economic losses at the final stage.
	Preservation of local seeds	Seed Sorting (taking e.g of pigeons pea.): Mark the healthy plant in the field. Allow these plants to mature 6-7 days more in the field. Expose the plants to sunshine in day time and cold in night for 4-5 days. When you find the pods are started cracking, then remove the seeds and collect. Clean the seed and dry it under sunshine till it reaches the right moisture stage. To test the right stage, put the seeds in between the teeth and press it. If you find a cracking sound, then the seed is ready to preserve. Sort the seed as per your requirement based on size, shape and quality. Preservation: Keep the seeds in a air tight container.(Either in plastic or earthen pot) Dry it in every 40-45 days. Pigeon pea seed packets are kept in between paddy seed bags for less insect pest attack. Seeds are also kept in kichen room so that smoke prevents pest to attack seeds. If you keep some coarse sands in between seeds, it will absorb excess moisture in seed 250 gram of tobacco powder, salt and ash or

		Begunia leaves, dry chillies and ash can be kept to keep seeds free from pest attack.

Details of preparation

Bijamruta:

Material required

1. Cow urine of local breed: 5 liters
2. Cow dung of local breed: 5 Kg
3. Lime: 50 gm
4. Forest soil: 1 palm of soil
5. Water: 20 liters

Preparation method: Pour 20 liters of water into the pot. Mix all the above ingredients in that pot with water and keep it for 24 hours. Stir the mixture twice a day. After 24 hours the Bijamruta will be ready to be applied in the field.

Uses:

- Mix 50-60 ml of Bijamruta per 2 kg of paddy seed and keep it for 6 to 7 hours in shade before it is used for sowing.
- In case of vegetables, the seeds after treatment with Bijamruta will be kept under for 6 to 7 hours before planting/sowing.
- Young seedlings also can be treated with Bijamruta before transplanting

Jibamruta

1. Cow urine of local breed: 5 liter
2. Cow dung of local breed: 5 Kg
3. Jagerry: 1-2 Kg
4. Gram flour: 1-2 Kg
5. Forest or field bund soil: 1-2 Kg
6. Water: 200 liters

Preparation Method: Take a big pot and put all the ingredients as mentioned above and mixed them thoroughly and keep the mixture in a shade area by covering the pot. Stir the mixture twice a day during morning

and evening with a stick from left to right side of the pot. Continue the practice for 2 to 3 days and your Jibamruta is ready to be applied in the field.

Uses:

- In paddy , application of Jibamruta will start from first intercultural operation and will be continued in every 15 days interval.
- As per requirement of the crop it can be applied up to 3 times in the field.

Agneyastra (For fruit and shoot borer)

Materials Required:

1. Cow urine: 20 liters
2. Tobacco: 1 kg
3. Green chilly: 500 gms
4. Garlic: 500 gms
5. Neem leaf: 5 Kg

Preparation Method:

Cut tobacco, green Chili, Garlic and Neem leaf into pieces and grind all the cut pieces. Take one earthen pot and put 20 liters of cow urine and heat under fire. After proper boiling of water, put all the cut pieces of above ingredient in the pot and stir it smoothly and cook it till the quantity became one fourth of original quantity. Remove the pot and keep the mixture for 48 hours in a shade area and then filter the mixture in a clean cloth. This can be kept in a plastic or glass bottle for 3 to 4 months.

Uses:

- For fruit and shoot borer mix 1.5 liter of Agneyastra with 50 liters of water for spraying.

Brhamstra

Materials Required:

1. Fresh Cow urine: 10 liters
2. Neem leaf: 3 Kg
3. Karanja Leaf: 2 kilo(in case of non availability , 5 kg of Neem leaf can be taken)
4. Custard apple leaf: 2 kilo
5. White Dudura leaf: 2 kilo
6. Guava leaf: 2 kilo
7. Castor leaf: 2 kilo
8. Papaya leaf: 2 kilo
9. Rotten fruit: 5 to 6

Note: A minimum of four types of leaves should be taken out of above mentioned 7 types of leaves. In case of non availability of any leaf , Putus(local name) leaf can be used

Method of preparation:

Take one earthen pot and put 10 liters of fresh cow urine and put it in fire. Cut all the leaves into pieces and put them in the pot and cooked it with the help of a stick. Cover the pot and cook it till it boiled 4 times and then remove the pot. Keep the pot in a shade area for 48 hours and then filter it with a cloth and keep the filtered liquid in a plastic and glass bottle which can be used for 6 months.

Uses:

- 1.5 liter of Brhamstra mixed with 50 liters of water will be applied in the crops.

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