MANUAL ON
SMALLHOLDER FRIENDLY TECHNOLOGIES

Facilitating Agricultural Regeneration Measures (FARM NE-III)

GUWAHATI GANA SEVA SOCIETY

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Background

People use technology to get around, communicate, learn, conduct business, and live comfortably. The history of technological use in human civilization spans millions of years. The Oldowan "industry" - the earliest techniques for creating stone tools—dates to at least 2.3 million years ago.

Agriculture technology began to evolve around 10,000 years ago. Simple hand tools that provided relief in the beginning gradually evolved into the mechanical equipment that farmers now use.

The options that nature has given us have their own inherent qualities that not only have many benefits but also give us a way to support ourselves. It's time to pause for a moment and consider the various cultural practices, and religious beliefs that leave traces of these wisdom and knowledge sources in our daily lives.

This manual brings forth certain smallholder friendly technologies that have been adopted by them during the implementation of the FARM programme. These technologies talk about certain proven methods of storage, propagation, and indigenous poultry management. Cold storage is a modified version of a scientifically validates technology. The propagation methods have been a shot in the arm for the smallholders. Such propagation methods are low labour intensive, cost effective, and result oriented within a short span of time. The indigenous poultry management is purely a traditional practice, that was found almost getting out of practice Such practice needs a great amount of precision with skilled hands. The manual is articulated in the simplest possible manner, so it reaches the stakeholders and benefit them.

GGSS is working with the ethnic communities like the Tiwas, Karbis, and Advasis. Almost 100% of the target families depend on agro-based livelihood including pisciculture and livestock. They also work as daily wagers during lean seasons. GGSS took forward these technologies as an option to the smallholders. Seasoned farmers were identified by GGSS to promote such technologies among the communities. This works wonders with the communities as they have one of their own speaking to them on what is best for them. As of date atleast 60% of the target families have adopted one or other technologies and it has given them the returns in terms of raise in the income.

This manual is perhaps a small beginning in documenting technologies that benefit people. GGSS with support from Caritas India is committed to work diligently on more of such farmer friendly technologies and make them available for the stakeholders. We sincerely hope that the readers will find this book to be both interesting and educational.

Air Layering Propagation Technique

Steps

Choose a 1-2 years old healthy branch on a live tree and remove the bark in the middle portion of the branch gently with a knife

Make a paste of soil mixed with cow dung and apply thickly on the peeled part

Cover the area tightly with a piece of transparent plastic and leave the branch at undisturbed for at least 15-20 days

Roots will appear in the air layered part after 15-20 days

Cut the branch

Remove the transparent plastic

Place it on a poly-bag and fill it with soil mixed with cow dung

Leave it for around 15 days

Result

Do's

a. The stem selected for the air layering propagation (ALP) process must 6 months old
b. Trim the side shoots and leaves from the selected branch
c. Before applying thickly paste of soil & cow dung on the peeled portion apply a few drops of organic growth hormone or cow dung liquid on it.
d. Avoid any kind of damages to the rooted branches kept in poly-bags
e. Water the poly-bags on a regular interval
f. Once the vegetative parts are visible the air layered branch is ready to be planted

Don'ts

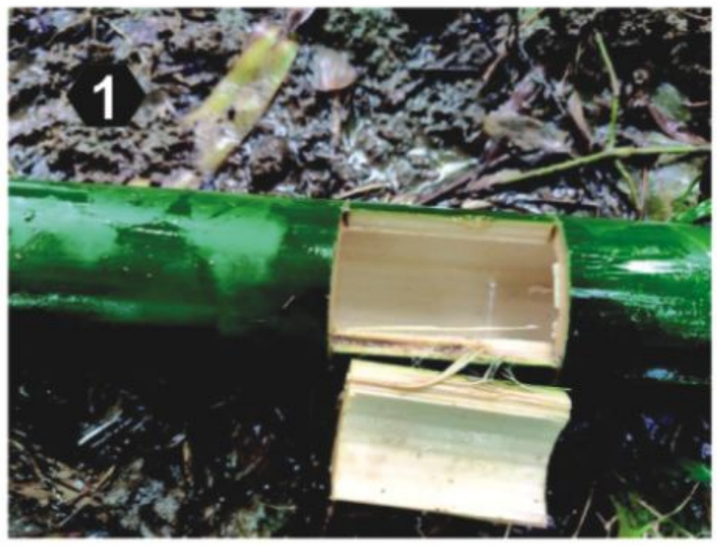
a. Do not plant it directly in the open after cutting the stem from its mother plant
b. Avoid overdose of hormone
c. Avoid grazing by animals

Advantages

a. ALP is very easy and cost-effective
b. As many as number of saplings can be developed from a single tree
c. Fruiting in air layered is faster than the conventional ones
d. There is a good demand for air layered saplings in the market, thus, opening avenues for more income of the smallholders

Bamboo Propagation Technique

Steps



Take an 1-2 years of age fresh bamboo of 5 feet length and cut holes in the intermodal areas with a machete or saw

Pour clean water into the holes

Seal the holes with a leaf or other available materials

Dig a pit of 3-5 inches depth

Place the bamboo gently into the pit with the holes facing upside and cover the pit gently with soil

Use sticks to mark the holes to be able to check the water level regularly.

Allow the bamboo to rest in the pit until shoots appears within a month's time or even less

Result

Do's

a. Bamboo selected must be at least 1 year old
b. Propagation must be done during the month of April to May
c. Organic growth hormones can be applied along with the water for better results
d. Check the water filled holes at an interval of 15-20 days and refill water if found dry
e. The soil above the pit must be moistened on a regular basis

Don'ts

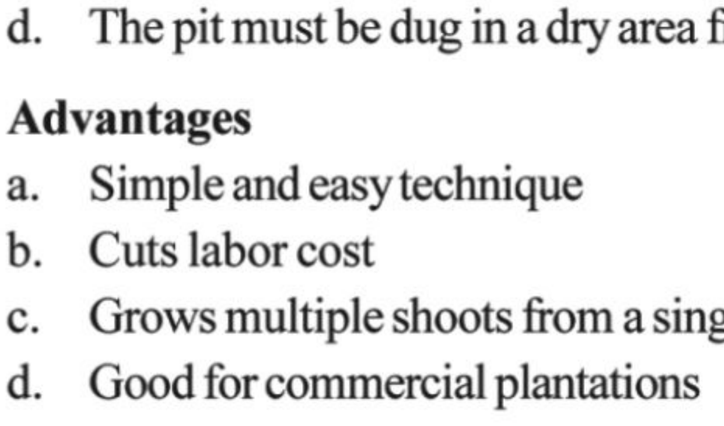
a. The place of propagation must not be changed after shoots appear
b. Water in the holes must not be allowed to dry
c. While burying the bamboo, soil must not put back very tightly
d. The pit must be dug in a dry area free of water logging

Advantages

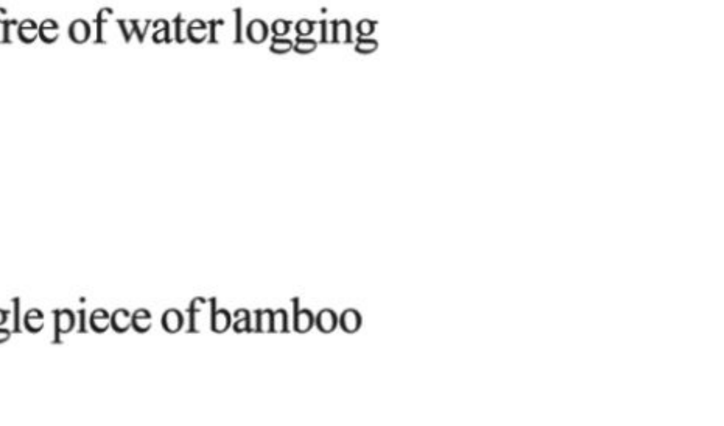
a. Simple and easy technique
b. Cuts labor cost
c. Grows multiple shoots from a single piece of bamboo
d. Good for commercial plantations

Indigenous Technique for Castration of Rooster (Local Breed)

Steps



Select a healthy rooster of at least 6-7 months of age



Take a new & clean shaving or incision blade along with clean needle, thread, mustard oil, turmeric powder or antiseptic cream whatever available.

Clear the portion in the abdominal area of the rooster by removing the feathers.

Make a small incision in the lower abdominal area of the rooster

Push index & middle fingers gently inside the abdomen

Identify the testicles and pull them out gently and carefully

Stitch the incision gently with the needle and thread

Apply a paste made of turmeric mixed with mustard oil or antiseptic cream on the stitched area and keep the rooster in isolation.

Result

Do's

a. The person performing the process must clean his hands with soap to avoid any infections.
b. Castrated rooster must be isolated from the rest for at least a day and kept under observation.

Don'ts

a. Do not practice without acquiring the skills
b. Utmost care must be taken to avoid pulling out or damaging of any vital organs like intestine and kidneys other than the testicles
c. Castrated rooster must not be allowed any food for first couple of hours after the process
d. Castrated rooster must not be allowed to mix with other poultry for at least one day

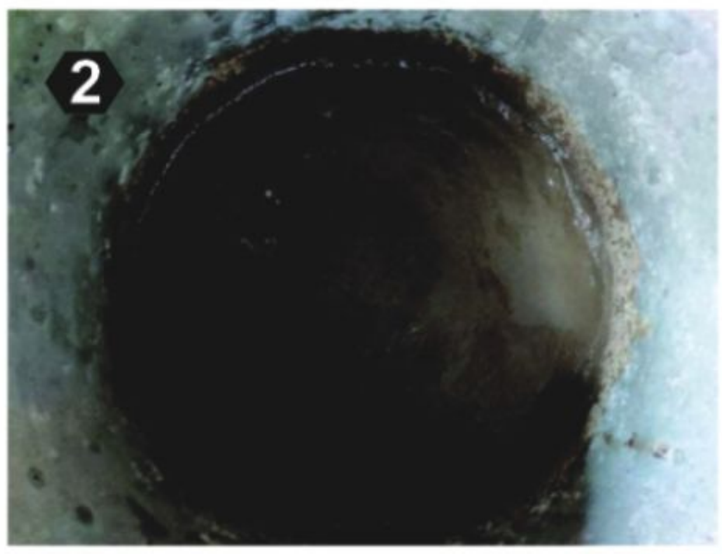
Advantages

a. Rooster grows bigger in size weighing upto 4-5 Kgs within a span of less than a year
b. Bears more flesh tastier than the conventional roster when cooked
c. Fetches money to the tune of Rs 2,000 per Kg especially during festivities or events

Modified Cold Storage

Steps

Select two spun pipes of two different diameters viz; 3 feet and 2 feet and place the small ring inside the larger one leaving a gap of at least 6 inches

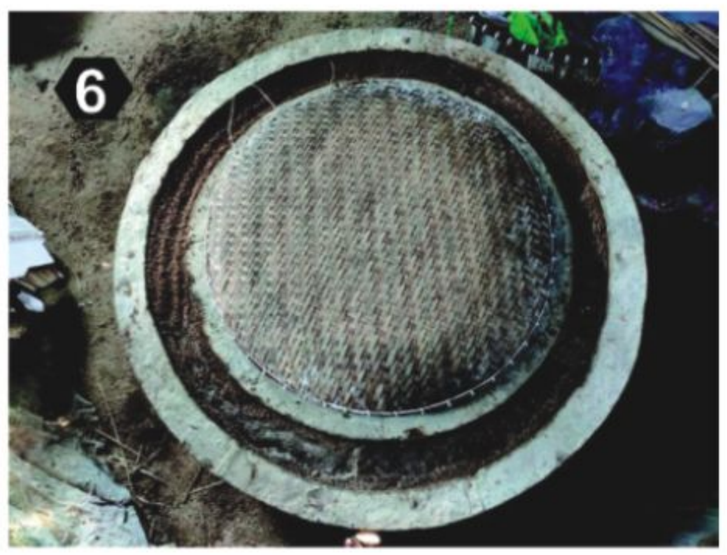


Clean the floor and apply mixture of soil and cow dung water

Collect riverbed sand, sun dry and stuff the riverbed sand tightly into the gap available between the two spun pipes

Pour water into the sand to moisten it

Place freshly harvested vegetables or even cooked food items inside the spun pipe



Cover the spun with a locally available material or anything that is made of bamboo.

Place a moistened cloth on top the cover.

Do's

a. Select a cool and dry place of installing the structure
b. Riverbed sand must have good water holding capacity
c. The sand must be moistened by sprinkling water regularly
d. The wet cover must also be kept moistened
e. The cover must be pressed with some heavy material to block rodents & others

Don'ts

a. Sand must not be flooded with water
b. Wet cover must not allow water droplets to fall on the vegetables
c. Vegetables must be monitored to avoid any decomposition
d. Cooked food items must not be kept for a very longer duration
e. Sand and the wet cover must not be allowed to dry

Advantages

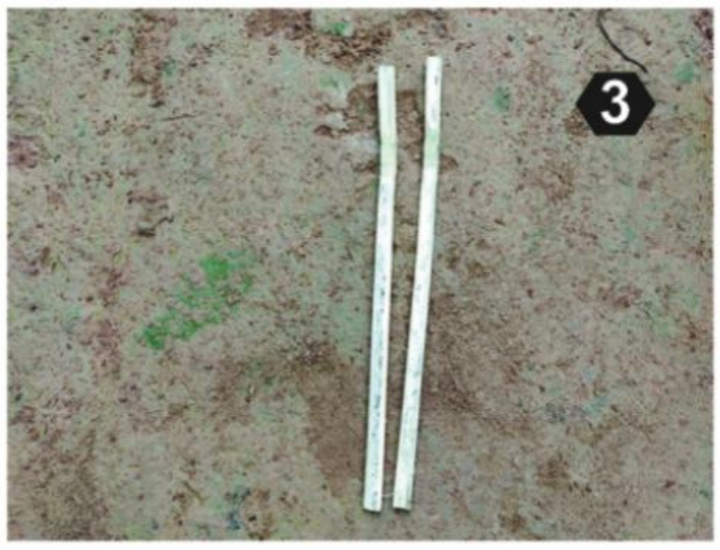
a. Affordable
b. No electricity required
c. Maintains favorable temperature for stored products
d. Extends the shelf-life different varieties of agro-products by 3-6 days as compared to conventional storage
e. Good for commercial storage in bulk

Papaya Propagation Technique

Steps

Choose a male papaya tree that produces only flowers and no fruit

At a height of 10 inches above the ground, make two incisions (across each other) of around 3 inches length with a machete or knife on the trunk of the papaya tree



Take couple of small bamboo sticks for incisions

Insert the bamboo sticks in both the cut portion of the stem from one end to another.

The tree will start bearing fruits within 4-5 months,

Result

Do's

a. Meant only for male plants
b. The incision made should allow the bamboo stick to enter at one end and come out at the other
c. Use only 2 bamboo sticks to be inserted into the stem.
d. The bamboo sticks once inserted have to be left undisturbed for a minimum 10 days

Don'ts

a. Do not cut the flowers from the male plant selected for the process

Advantages

a. The male papaya tree, which is otherwise considered as infertile, will start bearing fruits
b. At times it can bear more fruit than a female papaya tree

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