Office of the Project Director
Community-based Forest Management and Livelihoods Improvement in Meghalaya
Shalom Building, 2nd Floor,
Lower Lachumiere, Shillong—793001
+91 364-3510190 www.mbda.gov.in
meglife.mbda@gmail.com/jica.mbda@gmail.com

Meghalaya Livelihood Improvement through Forest Enhancement

Meghalaya Basin Development Authority

Japan International Cooperation Agency

No. MegLIFE/2024/115/03

Dated: 16th May 2024

Office Order

Sub: Technical Guidance for Salt Farms

The technical guidance along with cost norm for maintenance for 2 years are enclosed herewith for your information and necessary action. These norms are based on Minimum Wage for unskilled labor as notified by Labor Commissionerate Govt. of Meghalaya vide Notice No. L.BG 9/2023/5 dt.31st March, 2023 (i.e., Rs. 395/- per person day).

All DPMs to ensure adherence to the above-mentioned office order by all staff under their jurisdiction.

Enclosed: Technical guidance for SALT w/ Cost Norm

16/5

(Shri. Gunanka D.B, IFS)
Additional Project Director
MegLIFE, MBDA, Shillong

To:

1. All DPMs/BPMs, MegLIFE, MBDA
2. SALT Nodal Person MegLIFE, MBDA

Copy to:

1. The Project Director, MegLIFE, MBDA, Main Secretariat Building, Shillong
2. Knowledge Management, MegLIFE

Shri. Gunanka D.B, IFS)
Additional Project Director
MegLIFE, MBDA, Shillong

Technical Guidance for SALT

SALT is a system of settled agriculture suited for agriculture in the NE hill region. The main features are:

- Soil and Water conservation by means of contour hedgerows / live barriers across the slope.
- Fertility management and soil building by planting nitrogen-fixing species (NFPs) for hedgerows; pruning or hedgerows and mulching the contour inter-spaces with the biomass.
- Crop-Diversity for risk-management, pest, and disease control, weed management and regular supply of produce for home and market.

➢ PROCESS TO BE FOLLOWED FOR ESTABLISHEMENT OF THE SALT FARM

- Farmer selection to be done by the BPMU.
- Block-level Exposure-cum-Training to be conducted for the selected farmers in each block.

1. SITE SELECTION FOR SALT FARM:

- Sloping land preferably jhum areas. Steeply sloping lands of slope up to 60% can be selected.
- Where jhum land is not available, any prevailing land use can be selected provided at least partial sunlight is available under the canopy. NFP hedgerows will not do well under shade conditions.
- The area of the selected land should be at least 0.5 hectares. In many areas where the size of available fields is smaller than 0.5 ha., two smaller plots can be combined.
- Demarcation of the SALT Farm using GPS Unit. Measure the length and width of the farm in meters and estimate the number of contour lines (hedgerows) and running meters required.

2. LAND PREPARATION

- Clearing / weeding of the selected site. Undesirable vegetation like scrub bushes and weeds should be removed. Good grasses providing protective ground cover should be retained.
- Marking of contour lines using the A-Frame and bamboo stakes. Stakes should be retained till the NFP seeds have germinated. A horizontal spacing of 4 meters may be maintained between the contour lines.
- Prepare a shallow furrow along the contour line and arrange the dry weeds and other available biomass along the furrow.
- Burn the biomass when dry. This will kill the weed seeds and provide fertilizer (ash) for the germinating NFP seeds.

3. SEED SOWING FOR HEDGEROWS

- For warmer zones with elevations up to 1100 meters above sea level, *Tephrosia candida* and *Indigofera* are the species of NFPs being used for the hedgerows.
- Approximately 100 gms of seed is required for 100 running meters of hedgerow.

For colder zones with elevation above 1100 msl, citronella grass is used for the contour barriers.

1. Wait for a few good showers of rain to moisten the soil. Clean the contour furrow using a spade and then sow the NFP seeds / citronella slips along the furrow. Gently cover the seeds with the soil.
2. NFP seeds should be sown in a straight line along the contour. Seeds should be evenly spaced at 1 inch between seeds. Cover seeds lightly with soil. Retain some quantity of seed for gap-gilling later.
3. Sow alternate lines of Indigofera, Tephrosia and any other species being used. Do not mix different

species of NFP in the same line. Do not sow any other seeds of crops along the hedgerow line as they will disturb the effectiveness of the hedgerow.

4. Gap-filling. Tephrosia will germinate within one week while Indigofera will require at least two weeks to germinate. After seeds are 1 cm high, do gap-filling by sowing seeds where gaps are observed between the seedlings.

❖ **Double Hedgerows** may be developed by preparing a second line 50 cms below the contour line and sowing the NFP seeds in both lines. Double Hedgerows will be more effective for soil and water conservation and can be developed where sufficient open land is available and sufficient quantity of NFP seeds are available. Double hedgerows are not practical to implement under existing plantations and require more labor for establishment, weeding, pruning etc. Farmer should be advised accordingly and allowed to decide whether to go for single or double hedgerows.

4. MAINTENANCE OF THE SALT FARM

➢ WEEDING OF HEDGEROWS.

Regular weeding of the young hedgerow is essential to allow the NFP seedlings to grow without competitionfrom weeds. Weeds grow more vigorously and will use the nutrients, suffocate the NFP seedlings and harbor pests.

➢ **MAKING THE BIOFILTER**: Cutting of grasses and uprooting of undesirable weeds should be done and the materials used for making BIOFILTER along the Hedgerows for effective SWC. Foryoung NFP seedlings, the biofilter should be made below the hedgerows, and once the NFPs are strongenough, the biofilter should be made above the hedgerow.

➢ **PRUNING OF HEDGEROWS:** The height of the hedgerows is to be maintained at 1 meter. Hence one or two pruning are be done when they grow too tall. The clippings are to be used for **mulching** of the crops in the SALT farm.

FARMER INCENTIVE. Refer Annexure Cost Norms (annexure 1)

5. PRODUCTION ON THE SALT FARM.

Diverse cropping is to be practiced on the SALT farm for benefits of SWC, weed control, pest and diseasecontrol, maximize production and risk management. Basket of crops should be cultivated:

- Seasonal crops with 2 to 6-month duration (cereals, pulses, vegetables)
- Short term crops with 12 to 18-month duration (turmeric, ginger, tapioca, yams)
- Medium term crops 2-to-5-year duration (perennial pigeon pea, banana, papaya, pineapple)
- Long term horticulture (Parkia, mandarin orange and citrus species, moringa, litchi, mango, jackfruit).

Single line NFP Hedgerow

Double line NFP Hedgerow

Pruning of NFP Hedgerows and Mulching with the Clippings

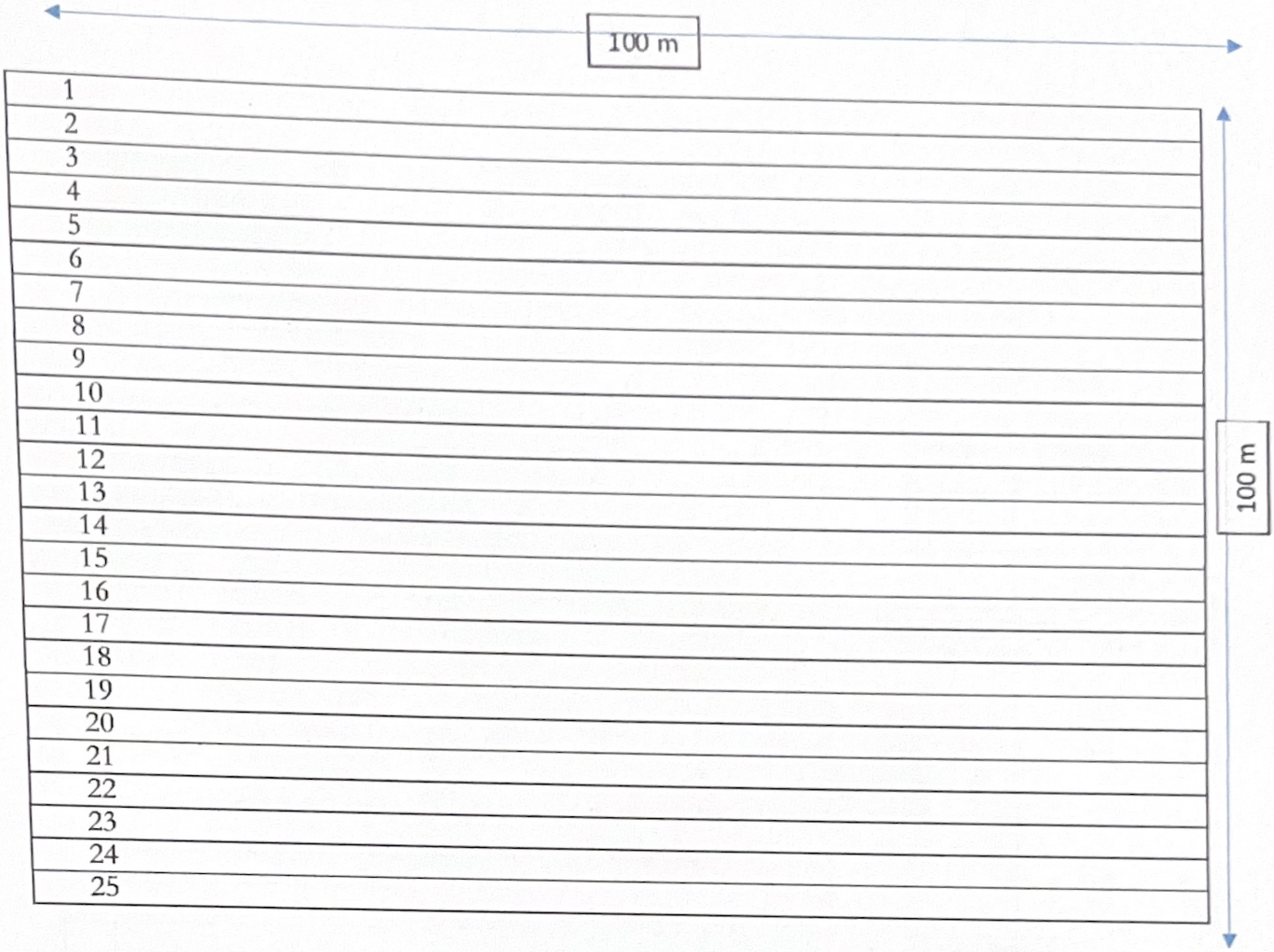
❖ **Estimation of Hedgerow Length for 1 HECTARE SALT FARM**

Area: 100,00 Sqm. Length = 100 m. Width – 100 m.

Length of each Hedgerow will be 100 m.

There will be 25 numbers of hedgerows (100 m width / 4 m horizontal spacing)

Hence Total Length of Hedgerows in 1 Hectare area will be 100 m x 25 no's = 2500 running meters.



NOTE: In reality, length and width of the field will be different, and the hedgerow length will need to be estimated accordingly.

When **a single line** of NFP is established, a 4 m horizontal distance is maintained between hedgerows.

When **double-line** of NFP is established, 8 m horizontal distance is maintained between hedgerows. In thiscase, there will be 12.5 hedgerows (100 m width / 8 m horizontal spacing). For double-line hedgerow, 50 cms spacing is to be maintained between the NFP lines.

SALT Model for 1 hectare plot

Cost Norm for establishing and maintaining NFP Hedgerows @ 2400 running metres / ha.

S. No.	Items	Qty	Mandays	Total Mandays	Unit Rate (INR)	Amount (INR)	Rs/rm*	Performance based Incentive
1	**NFP Seed for hedge rows (Sowing time April)**							
	Indigofera (1200 gm/ha)	1200			450	₹ 540.00		Incentive in form of NFP seeds will be provided to those farmers who have prepared the contour lines for sowing
	Tephrosia (1200 gm/ha)	1200			400	₹ 480.00		
					Subtotal	**₹ 1,020.00**		
2	**Labour**							
	Year 1							
	Field clearing	1	4	4	395	₹ 1,580.00		Incentive in form of Cash (Rs. 4740/ha) will be provided to those farmers who have prepared the contour lines for sowing
	Marking contour lines	1	4	4	395	₹ 1,580.00		
	Burning along the contour lines (biomass)	1	4	4	395	₹ 1,580.00		
	Subtotal - Line Preparation for Sowing					**₹ 4,740.00**	**1.9**	
	Seed sowing	1	4	4	395	₹ 1,580.00		Incentive in form of Cash (Rs. 7900/ha) will be provided to those farmers who have successfully established the NFP hedgerows.
	Weeding and biofilters (June to September)	2	4	8	395	₹ 3,160.00		
	Pruning of Hedgerows (1 during monsoon+ 1 before dry season) + Mulching of Saplings / crops	2	4	8	395	₹ 3,160.00		
	Subtotal - Hedgerow establishment and maintenance					**₹ 7,900.00**	**3.18**	
	Total (Labour Year 1)					**₹ 12,640.00**	**5.08**	
	Year 2							
	Weeding and Making biofilters (2 times a year)	2	4	8	395	3160	1.27	Incentive in form of Cash (Rs. 3160/ha) will be provided to those farmers who have successfully maintained the NFP hedgerows.
	Pruning of hedge rows + Mulching of Saplings / crops (2 times a year - ending June, August & October)	2	4	8	395	3160	1.27	Incentive in form of Cash (Rs. 3048/ha) will be provided to those farmers who have successfully maintained the NFP hedgerows.
	Total (Labour Year 2)					**6320**	**2.54**	
	Total Cost					**19980**		

Note: Where 4 m horizontal distance between the lines is maintained, single-line hedgerows are to be established. Where 8 m distance is maintained, double-line hedgerow are to be established. Total running meters of hedgerow will remain the same in case of single-line or double-line.

*Note: Incentive may be paid on running meter basis instead of hectare basis where the area of field is small and length of hedgerows is less than 2400 rm.