

Nutrient Management

Sl.No	Problem Identified	Specific farming situation for which technology is developed	Crop/ Animals etc	Breed/Variety	Specific Technology	Yield
1	Reclamation of soil acidity	Low and mid hills of Sikkim	Maize, wheat, rice	Nil	<p>i. A ready reckoner for lime requirement to attain the soil pH 6.5 has been formulated</p> <p>ii. Lime Requirement(LR) for maize, wheat and soybean should be based on either 1 to 2 equivalent of exchangeable aluminum or 25% of LR by Buffer method</p> <p>iii. Application of dolomite limestone equivalent to two exchangeable aluminum is optimum for production of four consecutive wheat maize crop sequences. Thereafter, it is necessary to apply half the limestone applied previously</p>	-----
2	Management of soil fertility under sequence cropping	Low and mid hills of Sikkim	Maize, wheat, rice	Nil	For sustained production of maize-wheat and rice-wheat sequences fertilizer dose of 100, 80 and 60kg NPK/ha is recommended	Nil
3	Increasing N-use efficiency in maize through intervention in method of application	Low and mid hills of Sikkim	Maize	Hybrid P 4640	Side band placement of N@120kg/ha through urea in three splits- 1/3 at sowing, 1/3 at knee-high stage and 1/3 at tasseling performed as the best method of urea application	82.00
4	Use of biofertilizers with	Low and mid hills of Sikkim	Maize	Hybrid P 4640	Seed treatment with Azophos followed by application of 40kg N	65.0

	and without fertilizers on maize				through FYM at sowing and two splits top dressing of urea half at knee-high stage and half at tasseling increased maize yield significantly	
5	Fertilizer recommended for HY rice varieties	For transplanted paddy	Rice	PD-10	N application @80kg/ha as urea in three splits i.e. ¼ broadcast and incorporated at transplanting without floodwater + ¼ top dressed at maximum tillering stage + ½ at panicle initiation stage is recommended for HYV rice	55.0
6	Low productivity and soil erosion	None	Pineapple	Kew	High density plantation across the slopes	600
7	Low yield of Okra due to irrational use of nutrients (fertilizers/manures etc)	Rainfed	Okra	HYV	Protection of okra with the recommended doses of fertilizers and biofertilizers to increase productivity	None
8	Low yield of tapioca	None	Tapioca	None	Evaluation of planting methods and organic manures Ridge and furrow method + 12kg FYM	8.25kg/plant
9	Low yield of pulses	Rainfed	Field pea Field pea	TRCP-8 TRCP-8	Foliar nutrition in field pea. Nutrient management in field pea	5.16q/ha 11.41q/ha
10	Low yield of Mesta	Rainfed	Mesta	HS-4288	Narrow spacing and nitrogen management (25 x10cm, 50% RDN + 50% from glioincidia leaves)	24.39q/ha
11	Soil loss, high cost of bench terracing and low production in the initial stage	Rainfed, watershed based farming	Agri./Horti.	HYV	Graded for ground bench terracing	Required 200 mandays/ha including water disposal system. Yield not affected
12	Low productivity of oilseed and	Rainfed foothills, hills	Groundnut Soybean	ICGS-76 JS-335	INM (Rhizobium + 2.5t FYM/ha + 50kg P205 + 30kg K ₂ O)	22.0 16.0

	pulse crops	Rainfed foothills, hills and valley	Rapeseed-toria	M-27	High yielding acid tolerant variety FYM 5t/ha + 15:15:15 kg NPK/ha	10.0
13	Low yield of tomato due to improper nutrient management	Rice fallows	Tomato	Mani khamnu	Use of 10t poultry manure per ha	300 - 400
14	Non maintenance of proper plant population and lack of application of nitrogenous fertilizers	Homestead	Nakupi (<i>Allium hokkerii</i>)	Local	Recommended spacing- 15 x 7.5cm Nitrogen-75kg/ha	115.00
15	Soil acidity	Rainfed hills and foothills	Groundnut Soybean	1. JL-24/ICGS-76 2. Pusa-16/MACS-13	1.a) Furrow Liming @ 500kg/ha pH 4.5-5.5 @ 250kg/ha pH>5.5 b) Rhizobium strain NC-92 in c) Rhizobium + Lime d) Lime 500kg/ha + FYM @ 10t/ha	1. 22-24.00 14.00 24-27.00 33-36.00 2. 18-20.00 15.00 21-23.00 29-31.00
16	Depletion of soil fertility	Jhum land	Maize	Local cultivar	Intercropping with legumes (Blackgram/ soybean/ groundnut)	17-22% increase in yield
17	Zn deficiency	Lowland rice	Rice	RC Maniphou - 7	Zn @ 5.0kg/ha + recommended dose of NPK (60:40:30kg/ha NPK)	68.00
18	Less mineralization of N	Lowland rice (for organic rich soil)	Rice	KD-263	Incorporation of 5t paddy straw/ha without NPK	56.00
19	Delineation of low, medium and high zones of soil fertility	Soils of Northeastern region	Soils	Soils	Soils of Northeastern region

20	Decision support system on fertility management of soils of Mizoram	Soils of Mizoram	Soils	Soils under dominant land use system of Mizoram	Web based computer programme	-----
21	Ready reckoner of fertilizer recommendation in Meghalaya	Hills and lowland situations of Meghalaya	Maize, rice and soybean	RCM1-1 of Maize, Sahsarang of rice	Soil test based fertilizer recommendation	Higher yield than conventional system
22	Lime application and recommendation software	Acid soils	For mainly leguminous crops and maize	-----	Soil pH based lime recommendation
23	Lime application methodology	Acid soils	Soybean and maize	-----	500kg/ha in furrows	-----
24	INM techniques	Acid soils	Maize and Mustard	-----	Combined use of FYM, fertilizer, lime and biofertilizer	*
25	Rehabilitation of marshy land	Marshy/Boggy lands in the valleys where ploughing is not possible	Rice/Maize/French bean/Vegetables	-----	**	-----

*

1. Soil fertility map of northeastern region has been prepared on the basis of information available from the different soil testing laboratories of the region.
2. A Decision Support System on fertility management of soils has been developed to access the block level soil test database of Mizoram.
3. Ready reckoner of fertilizer recommendation has been prepared for the state of Meghalaya for rice, maize and soybean.

4. District level software for fertilizer schedule prepared for the state of Meghalaya.
5. Lime application and recommendation software has been developed.
6. Nutrient recommendation software has been developed.
7. Application of FYM with reduction of 50% fertilizer increased the productivity of soybean by 60%, groundnut by 70%, and maize by 33% over the recommended dose of fertilizer with liming.
8. On the basis of the field experiments on liming a ready reckoner of lime to achieve the desired soil pH has been developed taking into consideration of soil organic matter, clay content and pH, to be adopted by the soil testing laboratories.
9. The productivity of soybean and maize can be increased considerably in acidic soils by application of 500kg/ha lime in furrows for each crop.
10. Combined use of FYM, fertilizer, lime and biofertilizer consistently gave higher yield of maize and mustard as compared to minus any one. Continuous use of FYM, biofertilizer and lime gave almost 60% yield of the maximum.
11. Fertilizer prescription equations for target yield have been developed for rice, maize and soybean and have been validated at farmers' field in the Ri-Bhoi District of Meghalaya.

**

Raised sunken bed technology

- 1:4 sunken: raised bed was found to increase the productivity upto 115.12q/ha and 118.879q/ha respectively. The systems productivity increases with increase in raised beds.
- Rice-Capsicum cropping system was found to be most productive with rice equivalent yield of 253.20 & 359.40q/ha
- 40 cm height of raised beds was found to increase the yield over 0,10,20,30cm treatments
- Among maize-based cropping systems, maize-pea is most productive with maize equivalent yield of 134.81q/ha. It was also observed that as the height of raised bed increased, the growth and yield attributes of maize also increased significantly.
- Maize varieties DA-61-A and RCM1-1 were found suitable for cultivation in the raised beds.
- Groundnut cultivation on raised bed had no adverse effect on yield of rice in sunken beds.
- The raised: sunken bed ratio of 1:2:5 increased the rice yield as compared to flat or grade.