Site Specific Nutrient Management

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Site-specific nutrient management (SSNM) is a need-based approach, which helps farmers to optimize the use of fertilizers in their rice fields. The growth and nutrient requirement of rice crop varies not only within and between fields, but also varies in seasons and years with weather.

Steps for SSNM

Step 1: Establish an attainable yield target

The amount of nutrients taken up by a rice crop is directly related to yield. It is the yield target to be achieved with specific amount of nutrients to be applied to the crop.

Step 2: Effectively use existing nutrients

The uptake of a nutrient from indigenous sources can be estimated by the grain yield for the crop without applying N, P or K. This can be determined using Nutrient Omission Plot Technique (NOPT) by leaving a strip in the field where respective nutrient source (N, P or K) is not applied.

Step 3: Apply fertilizer to fill the deficit between crop-need and indigenous supply due to inherent capacity of soil

N, P and K fertilizers are applied to supplement the nutrients from indigenous sources to achieve the yield target. The quantity of fertilizer needed is determined by subtracting the yield of the omission plots from the target yield. As a baseline, each ton of grain will need approximately 15-20 kg N, 2-3 kg P and 12-18 kg K, if the straw is not removed.

In SSNM, fertilizers are applied using the following principles to achieve high yield and high efficiency of plant use:

For transplanted rice under submergence, fertilizer recommendation per hectare is 60-20-40-5 N- P-K-Zn. The nitrogen is applied into 3 equal installments i.e. 1/3 as basal, 1/3 at tillering, and 1/3 at panicle initiation. In addition to this, 20 kg N and 20kg K_2O are to be applied 5-7 days after recession of flood to facilitate quick regeneration, and boost recovery from flood-shock.

Crop stage	Fertilizer	Dose (kg/bigha) – Sali season		Dose (kg/bigha) – Boro season		Application Method
		Through DAP	Through SSP	Through DAP	Through SSP	
Basal, at the time of transplanting	Urea	3.1	5.3	2.4	5.7	Broadcast & incorporate in soil at the time of field preparation
	DAP	5.7	-	8.7	-	
	SSP	-	16.7	-	25.0	
	MOP	8.9	8.9	6.7	6.7	
	$ZnSO_4$	3.3	3.3	3.3	3.3	
Tillering (20-25 DAT), after first weeding	Urea	6.0	6.0	6.0	6.0	Broadcast
Panicle initiation (40-45 DAT), after second weeding	Urea	6.0	6.0	6.0	6.0	Broadcast
*Additional fertilizer 5-7 days after flood recedes	Urea	6.0				Broadcast
	MOP	4.4				

Note:

• Do not apply urea at or after booting, it is too late and will not increase yields.

• Stop urea broadcast, in case Bacterial Leaf Blight (BLB) symptoms appear.

•Apply ZnSO4 once in three years

•As far as practicable, drain out standing water before fertilizer application. The leaf color chart (LCC) is a tool that can be used for assessing leaf N status and the crop's need for N.

•Never apply N fertilizer into dry fields.

•Apply complete dose of P and K fertilizer at the time of field preparation for transplanting or sowing.

•When deficiency symptoms of macro-nutrients appear, foliar spray of water soluble formulation of NPK (19:19:19) @ 2.5 kg/ha should be done for mid-season recovery.

•SSNM must be adjusted to local needs taking into consideration cropping history, seasonal effects, irrigation strategies and expected weather patterns.

Rice Fact Sheet

Assam Agribusiness and Rural Transformation Project (APART)

The World Bank is the funding agency of APART
Department of Agriculture, Assam is the nodal department for implementation of APART
ARIAS Society is the State Level coordinating and monitoring agency for APART
Assam Agricultural University is the leading Agricultural University of the state and implementing agency of APART, imparting research and scientific support.
IRRI is the rice global leader providing technical and hand holding support in the implementation of APART