BALANCED FERTILIZATION
POTASSIUM ROLE

D. Jena
Bala Thirugnanasothy (IPI)
G.H. Santra

Deptt. of Soil Science & Agricultural Chemistry
Orissa University of Agriculture & Technology
Bhubaneswar - 751003

What is balanced fertilization?

Crop needs many essential elements for optimum growth, Yield and quality. Nitrogen (N), Phosphorous (P), Potassium (K), Sulphur and Zinc are some of the essential plant nutrients. Crops need N, P and K in large amounts; hence these are applied through fertilizers. Application of plant nutrients in optimum ratio and adequate amounts as per crop requirement is called balanced fertilization.

What happens with continuous imbalanced fertilization?

Continuous imbalanced fertilization causes:-

- Depletion in soil fertility and crop productivity
- Drop in crop yields
- Poor crop quality
- Reduce Profits

How does potash increase quality of crops?

Potash is referred as the quality fertilizer in crop production. Potash application improves many quality aspects of the crop. With adequate potash fertilization,

- Grains are bolder and more shining
- More protein, oil and vitamin C in grains and fruits
- Enhance fruit colour and flavor
- Improve storage and keeping quality of agricultural products

How much potash do crops remove from the soil?

Every crop harvest removes nutrients from soil including potash. An average crop of rice yielding 5t/ha removes 110kg N/ha, 34kg P_2O_5/ha and 156kg K_2O/ha.The higher yield , the higher removal of nutrients-many crops remove more K than any other nutrient, indicating the necessity of application of an adequate quantity of potassic fertilizer.

What are advantages of balanced fertilization with Potash?

With adequate potash fertilization, it is possible to sustain high yields.

- Superior quality, which means easy marketing of produce.
- Higher yields and better quality, thus more profit to the farmers.

How does potash benefit the crops?

Potash promotes growth and increases yields. Potash regulates plant metabolism and maintain a healthy and robust crop which is more resistant to disease. Potash increases the use efficiency of other nutrients by the plant, thus the efficiency of applied urea and DAP increases. Potash fertilization increases root growth, drought tolerance and resistance to frost. It helps plants to resist attack of pests and disease and lodging.

Why potash fertilization is essential for our soils?

Soils do not have an unlimited supply of K. The soils of Orissa are medium in potassium status. Therefore, potash fertilization is essential to maintain soil productivity and fertility. Consecutive harvest removes large quantities of potash from the soil and if potash is not sufficiently replaced by fertilization, soils become deficient in K.

What is potash fertilizer?

Just like Urea and DAP fertilizer used to supply nitrogen and phosphorous, potash fertilizers are applied to crops for supply of potassium.

What are common potash fertilizers?

Fertilizer	Formula	% K_2O	Common Name
Potassium Chloride	K Cl	60	Mutriate of potash-MOP
Potassium Sulphate	K_2SO_4	50	Sulphate of potash-SOP
Potassium Nitrate	KNO_3	46	Nitrate of potash-NOP

Potash (MOP) fertilizers are of different colours: red, pink and white potash having same composition. Potash nutrient content are equal effectiveness when applied to soils. The colour has no agronomic significance in terms of crop response as crops do not distinguish between red, pink and white potash.

Removal Of Plant Nutrients by Crops				
Crop	Yield(t/ha)	Nutrient Removal(kg/ha)		
		N	P_2O_5	K_2O
Maize	6	120	50	120
Wheat	6	170	75	175
Potato	40	175	80	310
Tomato	50	140	65	190
Citrus	30	270	60	350
Cotton(Lint)	1	120	45	90
Sugarcane	100	130	90	340

Which is the best time to apply potash?

Application of potash is usually done at the time of sowing/planting (basal application). This ensures a good establishment of the crop and a subsequent supply of potash throughout the whole crop cycle. However, in sandy soils or heavy black soils, where potash can be lost by leaching or fixation, split application of potash is recommended. For an example potash is applied to rice in two splits (Half dose as basal and half dose at PI stage) to ensure continuous supply of potash to crop.

How much potash should be applied?

Potash should be applied on soil test basis. However, there are general fertilizer recommendations. Actual recommendations depend on type of crop and soil fertility status. Farmers are advised to test their soils before apply the chemical fertilizers for getting economic harvest.

Crop	Nutrients Recommended (kg/ha)		
	N	P_2O_5	K_2O
Rice	80	40	40
Wheat	80	50	40
Sorghum	80	40	40
Maize	80	40	40
Groundnut	20	40	40
Potato	150	80	100

Can organic manures supply enough potash to the crops?

Organic manures contain low amounts of N, P and K nutrients. Farm Yard Manure (FYM) and compost contain 0.5to0.6% K_2O, while potash fertilizer contains 50- 60% K_2O. For an example: To apply 60 kg K_2O/ha, you need to apply 10,000kg of FYM as compared to only

100kg of potash. Integrated use of organic manure with chemical fertilizer improve the soil quality by increasing microbiological activity and physical properties (Structure, water holding capacity, aeration). Best results are obtained when N, P and K fertilizer are applied in combination with organic manures. This is called Integrated Nutrient Management (INM).

The need and importance of potash application for harvesting high yields and superior quality produce is greater than ever before. It can be put into practice by using recommended rates of K along with other required nutrients. Steps may be taken to re-look to revise K recommendation rate for different crops to stop further mining from native sources. Appropriate initiative are needed quickly and on a large scale towards the goal of balanced nutrient application.

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