



BALANCED FERTILISATION - GS III MAINS

Q. Balanced fertilization holds immense promise for Indian agriculture. Bring out the challenge faced in Indian conditions and enumerate the measures needed to be taken for balanced fertilization in India. (15 marks, 250 words)

News: *How the next government will push 'balanced fertilisation'*

What's in the news?

- Following the Lok Sabha elections of 2024, achieving balanced fertilization is expected to emerge as a primary policy objective for the incoming government.

Balanced Fertilization:

- Balanced fertilization involves providing plants with optimal nutrient levels for healthy growth.
- It ensures that plants receive the right combination of primary nutrients like Nitrogen (N), Phosphorus (P), and Potassium (K), alongside secondary nutrients (S, Ca, Mg) and micronutrients (Fe, Zn, Cu, Mn, B, Mo).
- These nutrients play crucial roles in various aspects of plant development, from structural integrity to energy production and enzyme activation.

Factors Influencing Ratios:

- Soil type and crop requirements dictate the correct nutrient ratios. Soil tests reveal nutrient profiles, guiding fertilization strategies.
- Different crops demand specific nutrients at varying growth stages.
- For instance, legumes might require more nitrogen during the vegetative stage for nitrogen fixation, while fruiting crops might benefit from higher potassium levels during the fruiting stage for improved fruit quality and yield.

Benefits of Balanced Fertilization:

1. Enhanced Yields:

- Optimal nutrient mix supports maximum plant growth by ensuring that plants have access to all the nutrients they need in the right proportions.

2. Improved Quality:

- Stronger plants resist diseases and pests better, leading to higher-quality harvests with better taste, texture, and appearance.

3. Soil Health Promotion:

- Balanced fertilization sustains soil ecosystems by preventing nutrient imbalances and soil degradation, ensuring the long-term fertility and productivity of agricultural land.



4. Environmental Protection:

- Minimized fertilizer use reduces the risk of nutrient runoff, which can contaminate water bodies and harm aquatic ecosystems. By applying only the necessary nutrients, farmers can minimize environmental impact.

5. Cost Efficiency:

- Preventing overuse of fertilizers saves resources and lowers costs for farmers while maximizing the effectiveness of fertilization practices, leading to improved profitability and sustainability.

Challenges in Achieving Balanced Fertilisation:

1. Price Disparities:

- Subsidized urea distorts fertilization practices, leading to overuse of nitrogen and neglect of other essential nutrients like phosphorus and potassium.

2. MOP Pricing Issues:

- High Muriate of Potash (MOP) prices deter farmers from using potassium fertilizers, leading to widespread potassium deficiencies in soils and reduced crop yields.

3. Soil Testing Gaps:

- Limited availability of soil testing facilities in rural areas makes it challenging for farmers to access accurate soil nutrient information, hindering informed decision-making regarding fertilizer application.

4. Farmer Awareness:

- Many farmers lack awareness about the importance of balanced fertilization and the specific nutrient needs of their crops, leading to suboptimal fertilization practices.

5. Past Scheme Failures:

- Previous initiatives like the Nutrient-Based Subsidy (NBS) scheme failed to effectively promote balanced fertilization due to inadequate implementation and lack of consideration for urea pricing distortions.

Strategies for Implementation:

1. Integrated Nutrient Management (INM):

- INM combines chemical fertilizers, organic matter, and crop rotations to ensure holistic soil health and balanced nutrient availability for crops.

2. Customized Fertilizers:

- Tailored fertilizer blends meet the specific nutrient requirements of different crops and soil conditions, optimizing nutrient use efficiency and crop yields.



3. Advanced Approaches:

- Technologies like Soil Test Crop Response (STCR) and Diagnosis and Recommendation Integration System (DRIS) provide precise recommendations based on soil and crop-specific data, improving the accuracy and effectiveness of fertilization practices.

4. Education and Training:

- Farmer education programs and training initiatives can help increase awareness about the benefits of balanced fertilization and provide farmers with the knowledge and skills needed to implement these practices effectively.

5. Market Access and Policy Reforms:

- Ensuring the availability of balanced fertilizers at reasonable prices through policy reforms and targeted subsidies can incentivize farmers to adopt balanced fertilization practices and promote sustainable agriculture.

Balanced fertilization holds immense promise for Indian agriculture, offering increased yields, improved quality, and environmental sustainability. However, overcoming challenges like pricing policies, limited soil testing infrastructure, and farmer awareness gaps is crucial for widespread adoption and success. By implementing strategies such as INM, customized fertilizers, advanced technologies, and farmer education programs, India can harness the benefits of balanced fertilization and ensure the long-term health and productivity of its agricultural sector.