

No-2: Do's and Don'ts of Fertilizer Use

The rising cost of fertilizers and declining soil health are major concerns for farmers. Fertilizers are important for optimal crop yields, but their improper use can harm soil, reduce efficiency, and increase costs.

- The nutrient use pattern in India is highly imbalanced, with an approximate N:P:K ratio of 9.3:3.5:1, indicating excessive use of nitrogen compared to phosphorus and potassium.
- This skewed use of fertilizers is adversely affecting soil health, nutrient availability, and long-term productivity.
- Therefore, fertilizers should be applied in a balanced and scientific manner to achieve maximum benefit.

Why proper fertilizer use matters

- Correct use not only improves crop yield and quality but also helps in maintaining soil fertility and sustainability over the long term.
- Every field has different needs. Do not apply fertilizers blindly. More fertilizer does not mean more yield. Use fertilizers wisely to get better yield, save money, and keep soil healthy.

 Follow 4R Principles: Right fertilizer; Right amount; Right time and Right method

Do's of fertilizer use

Follow soil testing

- Test soil before applying fertilizers to know the actual nutrient status of your field.
- Apply nutrients as per recommendation based on soil test results and crop need.
- Avoid guesswork, as blind application leads to imbalance and unnecessary cost.

Use balanced fertilization

- Apply N, P, K in the proper ratio (4:2:1) according to crop requirement for better growth.
- Do not depend only on urea, as it supplies only nitrogen and causes imbalance.
- Include micronutrients (as per soil testing), as their deficiency can limit crop yield.

Apply at right time

- Apply fertilizers at critical crop growth stages when nutrient demand is high.
- Split nitrogen into 2-3 doses to reduce loss and improve efficiency.
- Apply before irrigation so that nutrients dissolve properly and reach roots.

Use organic sources

- Use FYM, compost, and vermicompost to improve soil health and fertility.
- Retain crop residues to soil instead of burning to recycle nutrients.

- Practice green manuring (dhaincha, sunhemp, cowpea, pillipesara etc.) to naturally enrich soil with nitrogen.
- Adopt integrated nutrient management (inorganic + organic) for sustaining soil health and achieving optimum yield.

✓ *Adopt proper placement*

- Place fertilizer near root zone so that plants can absorb nutrients easily.
- Avoid surface broadcasting, especially for urea, to reduce nutrient loss.
- Use deep placement in paddy to minimize nitrogen loss and improve efficiency.

✓ *Use biofertilizers*

- Use Rhizobium for pulses to help in natural nitrogen fixation.
- Use crop-specific Rhizobium strains for pulses to ensure effective nodulation.
- Use phosphate-solubilizing bacteria (PSB) for better phosphorus availability.
- Use Azotobacter/ Azospirillum for cereals and vegetables.

✓ *Maintain soil moisture*

- Apply fertilizer in moist soil for better dissolution and uptake.
- Irrigate after application if needed to help nutrients reach root zone.
- Avoid very dry conditions, as nutrients cannot be properly absorbed.

✓ *Use foliar application of nutrients during moisture stress*

- Foliar feeding improves nutrient use efficiency and helps sustain crop growth during soil moisture stress.
- Spray 2% urea solution or DAP solution as recommended.

⚠ **Don'ts of fertilizer use**

⊖ *Do not apply without soil test*

- Leads to nutrient imbalance in the soil, affecting crop growth.
- Wastes money due to unnecessary or excess fertilizer use.

⊖ *Avoid excess use of urea*

- Excess nitrogen causes weak and lush plants prone to pest attack.
- Leads to lodging (falling of crops), especially in cereals.
- Increases chances of pest and disease incidence.
- Reduces grain quality and lowers overall yield.

⊖ *Do not apply all at once*

- Causes nutrient loss through leaching and volatilization.
- Reduces fertilizer use efficiency and crop benefit.

⊖ *Avoid application on dry soil*

- Nutrients are not properly absorbed due to lack of moisture.
- Leads to wastage of fertilizers and poor crop response.

⊖ *Do not apply before heavy rain*

- Nutrients get washed away from the field with rainwater.
- Causes water pollution and reduces fertilizer effectiveness.

⊖ *Do not ignore organic manures*

- Soil becomes hard and less fertile over time.
- Reduces beneficial microbial activity and soil health.
- ⊖ *Avoid imbalanced fertilization*
- Lack of micronutrients affects crop growth and yield.
- Continuous imbalance leads to poor soil health and productivity.
- ⊖ *Avoid improper biofertilizer use*
- Don't mix biofertilizers directly with chemical fertilizers or pesticides.
- Follow precise application guidelines to prevent biofertilizer failure.
- Avoid application during peak heat, severe drought, or heavy rainfall.
- Don't use after the expiry date.

Sustainable agriculture begins with healthy soil. Balanced fertilization, guided by soil testing and supported by organic manures, biofertilizers, green manures, and crop diversification, can help maintain soil fertility while ensuring stable crop yields. Reducing the excessive and imbalanced use of chemical fertilizers not only lowers cultivation costs but also protects the environment and improves long-term farm productivity. By adopting scientific nutrient management practices today, farmers can build a more resilient, profitable, and sustainable agricultural future for generations to come.

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