



Republic of the Philippines
OFFICE OF THE SECRETARY
Elliptical Road, Diliman
1100 Quezon City

MEMORANDUM ORDER

No. 74

Series of 2021

SUBJECT: SUSTAINING FARM PRODUCTIVITY, SCALING BALANCED FERTILIZATION USING FERTILIZER MORE EFFECTIVELY, APPLYING COST - REDUCING PRACTICES AND DIVERSIFYING TO INCREASE INCOME

The Department of Agriculture has to exert extra efforts to sustain the gains in agricultural productivity despite the continuing increase of global and local fertilizer prices. This is the time that we must exercise both political and technological imperatives to help our farmers cope with the increasing cost of fertilizer and sustain our productivity. Hence, it is directed to adopt the following measures:

Section 1. At the national level:

- 1) Propose the expansion of fertilizer subsidy coverage.
- 2) Support private sector source out fertilizer from other countries.
- 3) Monitor closely local stocks, supply movement, and prices.

Section 2. At the field operations level

- 1) Sustain farm yields by scaling the adoption of balanced fertilization and the application by farmers of fertilizer optimizing practices and technologies.
- 2) Promote direct seeding in rice to reduce cost and intercropping and crop diversification to increase income.
- 3) Encourage the support of the local government units (LGUs) for the farmers and complement their support with DA interventions.
- 4) Package all government interventions for holistic messaging, offer them on time, and find complementation with other government programs and support, i.e., seeds, technical assistance, fertilizer subsidy, machineries, credit, and financial aid.

Section 3. Scaling Approach for Balanced Fertilization

- 1) Include funding of balanced fertilization in extension service and training of the different banner programs.
- 2) Integrate balance fertilization into PalayCheck and other recommended crop management practices.
- 3) Include balance fertilization among the technologies promoted in farm clustering
- 4) Package with seed distribution recommended management practice for balanced fertilization.

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Section 4. Recommended Balanced Fertilization Protocol

- 1) Use results of soil test or conduct a soil test to determine soil nutrient status.
- 2) Formulate balance fertilizer management based on soil nutrient status and target yield.
- 3) Apply cost-effective fertilizer absorption enhancers as an option to increase N absorb by the plant.

1. Use soil test results or conduct a soil test to determine soil nutrient status

As a role, conduct soil analysis if no recent soil nutrient status data is available. Alternatively, observing the topography and the plants growing in the area can also indicate soil nutrient deficiencies. For practical purposes, conduct soil analysis by clustering farms. Minus One Nutrient Element Technique(MOET) can effectively detect zinc deficiency due to its unavailability in irrigated rice areas.

2. Formulate balance fertilizer management based on soil nutrient status and target yield

Based on soil nutrient status and yield target, nitrogen from organic fertilizers can replace a portion of the nitrogen requirement from inorganic fertilizers (ammonium sulfate with 21% N or urea with 46 % N, as source). The higher the nitrogen content of the organic fertilizer, the greater the percentage it could replace inorganic fertilizer. A particular volume of organic fertilizer can substitute a bag of inorganic fertilizer, as shown below.

Organic Fertilizer Source (Nitrogen Content ³)	Bags of organic fertilizer needed to replace	
	1 bag AmmoSul (21-0-0)	1 bag Urea (46-0-0)
Rice straw(0.75%N)	28	61
Compost ¹ (1.5%N)	14	31
Animal Manure ² (2.5%)	8.5	18
Chicken manure(3.0%)	7	15



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RECOMMENDED RATES FOR RICE

Organic Fertilizer Source	Percent Nitrogen (%) ³	No. of Bags of Organic Fertilizer equivalent to 1 bag of Urea	Nitrogen Recommendation (kg/ha) ⁴		
			150	120	90
Rice Straw	0.75	61	127	97	67
Compost ¹	1.50	31	127	97	67
Animal Manure ²	2.50	18	127	97	67
Chicken Manure	3.00	15	127	97	67

¹Compost – organic fertilizer from other crop residues

²Animal manure – from animals like hog, cow, carabao, or other ruminants

³Maximum N from organic fertilizer based on analysis

⁴Figures are in the form of pure nitrogen, 1 bag(50kg) of urea (46-0-0) contains 23kg N

It is also recommended that farmers' best practices in combining organic and inorganic fertilizers be considered in formulating balanced fertilization recommendations.

CRITICAL GROWTH STAGE OF UREA APPLICATION WHEN USING LESS THAN THE RECOMMENDED RATE

Growth Stage	Number of Bags Urea Fertilizer ¹	
	4 bags ²	3 bags ³
Transplanted		
• Basal ⁴	0	0
• 14 DAT	1	1
• Tillering stage ⁵	2	2
• Panicle Initiation	1	0
Direct Seeded		
• Basal ⁴	0	0
• 15-20 DAS	1	1
• Tillering Stage ⁵	2	2
• Panicle stage	1	0

¹ 14-14-14 should be used based on soil analysis (e.g., using MOET). Use 14-14-14 (contains 7kg N per bag) if there is P or K deficiency.

¹ Apply fertilizer in the morning or late afternoon with a minimum water level in the paddy.

² 4 bags of urea (92 kg N), with fertile soil and without Zinc deficiency/unavailability, the minimum number of bags that can give 6 tons Table 1, minimum recommended for the dry season.

³ 3 bags of urea (69 kg N) is the minimum number of bags recommended, especially during the wet season, provided other soil deficiencies are resolved (Table 1).

⁴ Incorporate organic fertilizer equivalent to 1 bag urea during land preparation.

⁵ 2 splits recommended using leaf color chart (LCC).



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Table 1. Depending on soil condition and yield target, the recommended fertilizer rate is estimated at 20kg N per ton (approximately one bag Urea) rice yield

Farm Conditions	Grain yield (t/ha/season)					
	Wet or Adverse Season			Dry or Favorable Season		
	Hybrid rice	Certified seeds	Good seeds	Hybrid rice	Certified seeds	Good seeds
Maximum attainable yield (Limited by climate and variety)	9.20	8.00	7.20	11.50	10.00	9.00
Yield with best nutrient and cultural management practices (Limited by lodging)	7.36	6.40	5.76	9.20	8.00	7.20
Yield where there are macronutrients (NPK) with water problems	5.52	4.80	4.32	6.90	6.00	5.40
Yield when there are micronutrients (Zinc, Sulfur, etc.) with pests and crop management problems (crop establishment, land preparation)	3.68	3.20	2.88	4.60	4.00	3.60

Note: Maximum attainable yield is based on inherent weather, hydrological (i.e. flooding) and soil (texture) conditions in the area. It fluctuates from year to year by $\pm 10\%$.

There is 15% increase in using hybrid seeds compared to inbred certified seeds.
There is 10% decrease by using good seeds compared to inbred certified seeds.




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Section 5. Effectivity. This Order shall take effect immediately.

Done this 29th day of November 2021



WILLIAM D. DAR, Ph. D.
Secretary 



DEPARTMENT OF AGRICULTURE
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