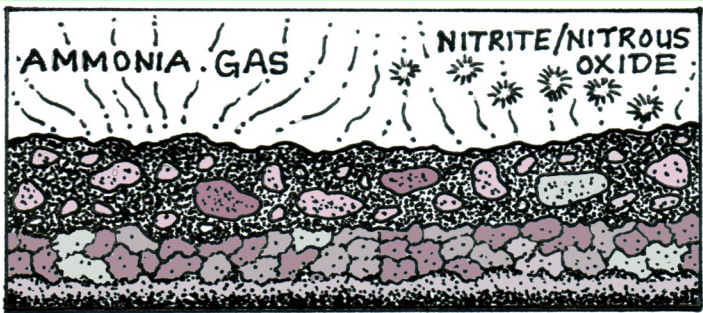


INTRODUCTION

The focus of nutrient management is nitrogen (N) management. It is the most commonly used nutrient that produces significant effects on crop growth. Also, it is used in the biggest quantity among all fertilizers, yet, it is subject to great losses through leaching, volatilization, and seepage, thus, the need to split the application of nitrogen to attain better if not optimum yield.

The efficiency of fertilizer use (N, P, and K) is greatly improved if properly mixed or incorporated with the soil upon application. The rice crop responds better to nitrogen fertilizer during the dry season than during the wet season. Sunlight, which is necessary for the manufacture of plant food, is more abundant during the dry season.

For transplanted rice, apply part of the needed nitrogen as basal based on computations. All phosphorus and potassium shall be applied as basal for plant's growth and development. This is best done just before final harrowing to allow thorough incorporation of fertilizer materials with the soil, thus, preventing loss and putting the fertilizer nearer to the roots. Do the second application of urea just before the reproductive stage, 5-7 days before panicle initiation, as topdress fertilizer. Two-split method of fertilizer application is usually done during the rainy season. The third application is at 10% flowering to increase the number of filled grains and adds grain weight. Three-split method of fertilizer application is usually done during the dry cropping season.



Since the applications are to be topdressed, saturate the field before putting the fertilizer. If water supply is difficult in the area, a 2-3 cm water depth will suffice. Also, remove weeds before topdressing to ensure maximum fertilizer utilization by the crops.

METHODS OF FERTILIZER APPLICATION

1. TWO (2) SPLIT METHOD OR BEST SPLIT (Recommended for the wet cropping season)

Recommended Rate (RR) = 90 – 50 – 0 kg/ha

Where: Nitrogen (N) is equal to 90
Phosphorus (P) is equal to 50, and
Potassium (K) is equal to 0

Formula:

$$\text{Weight of Fertilizer Materials} = \frac{\text{RR}}{\% \text{ Nutrient Element}}$$

Available Fertilizer Materials

1. 16 – 20 – 0 (Ammophos)
2. 46 – 0 – 0 (Urea)
3. 0 – 18 – 0 (Solophos)

A. 1st Split = ½ of N + all P and K to be applied as basal

A.1. Option 1 using double fertilizer element.

$$\frac{90}{2} = 45 \quad \text{Weight of } 16 - 20 - 0 = \frac{50}{.20} = 250 \text{ kg/ha} \times .16 = 40$$

RR = 45 – 50 – 0 kg/ha

$$\frac{40 - 50 - 0}{5 - 0 - 0} \quad \text{Weight of } 46 - 0 - 0 = \frac{5}{.46} = 10.87 \text{ kg/ha}$$

5 – 0 – 0 kg/ha

$$\frac{5 - 0 - 0}{0 - 0 - 0}$$

A.2. Option 2 using single fertilizer element.

$$\frac{90}{2} = 45 \quad \text{Weight of } 46 - 0 - 0 = \frac{45}{.46} = 97.82 \text{ kg/ha}$$

RR = 45 – 50 – 0 kg/ha

$$\frac{45 - 0 - 0}{0 - 50 - 0} \quad \text{Weight of } 0 - 18 - 0 = \frac{50}{.18} = 277.77 \text{ kg/ha}$$

0 – 50 – 0 kg/ha

$$\frac{0 - 50 - 0}{0 - 0 - 0}$$

B. 2nd Split = ½ of N to be applied at 5-7 days before panicle initiation as topdress)

$$\frac{90}{2} = 45 \quad \text{Weight of } 46 - 0 - 0 = \frac{45}{.46} = 97.82 \text{ kg/ha}$$

RR = 45 – 0 – 0 kg/ha

$$\frac{45 - 0 - 0}{0 - 0 - 0}$$

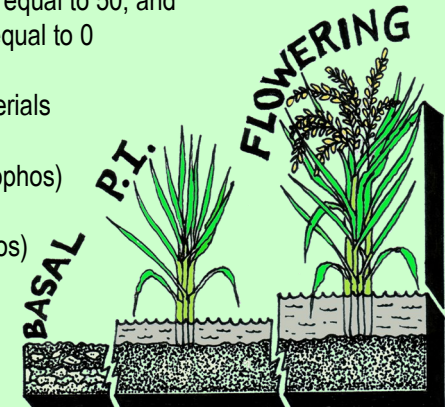
2. THREE (3) SPLIT METHOD (Recommended for the dry cropping season)

Recommended Rate (RR) = 90 – 50 – 0

Where: Nitrogen (N) is equal to 90
Phosphorus (P) is equal to 50, and
Potassium (K) is equal to 0

Available Fertilizer Materials

1. 16 – 20 – 0 (Ammophos)
2. 46 – 0 – 0 (Urea)
3. 0 – 18 – 0 (Solophos)



A. 1st Split = 1/2 of N + all P and K to be applied as basal

A.1. Option 1 using double fertilizer element.

$$\frac{90}{2} = 45 \quad \text{Weight of } 16-20-0 = \frac{50}{.20} = 250 \text{ kg/ha} \times .16 = 40$$

$$\text{RR} = 45 - 50 - 0 \text{ kg/ha} \quad \text{Weight of } 46 - 0 - 0 = \frac{5}{.46} = 10.86 \text{ kg/ha}$$

$$\frac{40 - 50 - 0}{5 - 0 - 0}$$

$$\frac{5 - 0 - 0 \text{ kg/ha}}{5 - 0 - 0}$$

$$\frac{0 - 0 - 0}{0 - 0 - 0}$$

A.2. Option 2 using single fertilizer element.

$$\frac{90}{2} = 45 \quad \text{Weight of } 46 - 0 - 0 = \frac{45}{.46} = 97.82 \text{ kg/ha}$$

$$\text{RR} = 45 - 50 - 0 \quad \text{Weight of } 0 - 18 - 0 = \frac{50}{.18} = 277.77 \text{ kg/ha}$$

$$\frac{45 - 0 - 0}{0 - 50 - 0}$$

$$\frac{0 - 50 - 0 \text{ kg/ha}}{0 - 50 - 0}$$

$$\frac{0 - 0 - 0}{0 - 0 - 0}$$

B. 2nd SPLIT = 1/3 of N to be applied 5-7 days before panicle initiation as topdress

$$\frac{90}{3} = 30 \quad \text{Weight of } 46 - 0 - 0 = \frac{30}{.46} = 65.21 \text{ kg/ha}$$

$$\text{RR} = 30 - 0 - 0 \text{ kg/ha}$$

$$\frac{30 - 0 - 0}{0 - 0 - 0}$$



C. 3RD SPLIT = 1/6 of N to be applied at 10% flowering as topdress

$$\frac{90}{6} = 15$$

$$\text{RR} = 15 - 0 - 0 \text{ kg/ha} \quad \text{Weight of } 46 - 0 - 0 = \frac{15}{.46} = 32.60 \text{ kg/ha}$$

$$\frac{15 - 0 - 0}{0 - 0 - 0}$$

*Note: Split application increases the efficiency of the plant's fertilizer use. Also, provides the necessary nutrient element needed by the plant during the critical stages of the cropping cycle.

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Designed and Printed by:



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Simple Fertilizer Computations Using SPLIT METHOD OF APPLICATION In Rice Production

