ROOT ZONE PLACEMENT OF FERTILIZER IS PROFITABLE

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When we apply Nitrogen fertilizer to a rice crop, some of the nitrogen returns to the atmosphere through denitrification and volatalization. Some of it can get lost by leaching through coarse textured soils, or 'tied up' in the process of decomposition of organic matter.

Experiments have proved that deep placement of fertilizer increases its efficiency in paddy fields by minimising loses due to volatalisation and microbial oxidation. 68% of the fertilizer Nitrogen applied 10 cm. deep as a basal application was used by rice plants: only 28% of Nitrogen was used when the fertilizer Nitrogen was applied by broadcasting. When a rice crop is top dressed with urea (applied broadcast) upto 5.8% of applied Nitrogen can be lost due to volatalisation during the 1st 11 days after broadcasting. Losses of Nitrogen when urea is applied in mud balls is about 0.25% of the Nitrogen applied during the 1st 11 days after application.

This suggests that fertilizer placement in the soil - using mud balls - minimises Ammonia volatalization and increases Nitrogen use efficiency.

TABLE 1: Effects of methods of Nitrogen application on grain yield of irrigated IR 26 and IR 36 (IRRI-1976-Dry Season).

Method of Nitrogen application	Grain Yield (bushels/acre)		
	IR 26	IR 36	Mean
No Nitrogen fertilizer	71	73	73
Urea (56 Kg N/ha) broad cast	99.5	97.6	99.5
Urea (56 Kg N/ha) mud balls	135	117.6	126.5

Extracted from Annual Report IRRI (1976)

The Technique

To place the fertilizer in the root zone of growing rice plants, at the rate of 30 Kg.N/ha, follow the procedure given below :-

(1) Make a mud ball about 5 cm. in diameter. Normal mud in the field is suitable. The mud should be firm enough to mould into shape with hands and not so wet that water squeezes from it when handled.

(2) Make an imprint in the mud ball with your thumb.

(3) Take a bottle cap or a tiny container which holds 1 gram of urea.

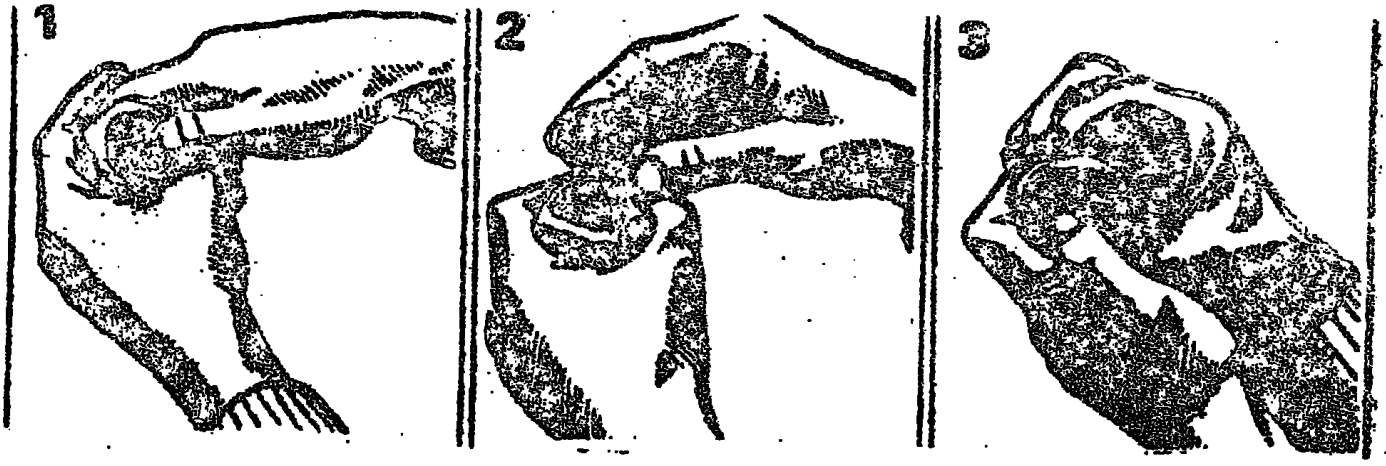
(4) Drop 1 gram of urea in the centre of the mud ball.

(5) Roll the mud ball between your palms to seal the fertilizer inside. Take care not to allow any urea to be spilled out of the mud ball.

(6) Leave the mud balls for a few hours in the sun to harden slightly but don't store them for more than one day. (If kept longer someof the fertilizer value may be lost.)

(7) Drop one mud ball between every four rice hills. Step on the mud ball to push it into the mud. The mud ball should be pushed to a depth of 10-12 cm in the mud.

(8) The amount of fertilizer to be used depends on the rate of application and the type of fertilizer you use. (See Table 3).



Make a mud ball of 5 cm.diameter, and make a hole in it.

Place the measured amount of fertilizer in each ball.

Close the hole in the mud ball in any manner convenient to you.

TABLE 3.

Amount(in grams) of fertilizer per mud ball at various rates of N as urea or ammonium sulphate.

Rate of application (Kg.N/ha)	Urea (45% N)	Ammonium Sulphate (20.6% N)
30	1.066	2.33
60	2.13	4.66
90	3.20	6.99

Practical problems

You will need 62,500 mud balls per hectare if you have transplanted rice seedlings at a spacing of 20 cm x 20 cm.

The number of mud balls required should be calculated on the basis of spacing you adopt. If transplated at 20 cm x 20 cm spacing, number of mud balls required will be as follows.

For 1 hectare	-	62,500
1 acre	-	25,300
1/2 acre	-	12,650
1/4 acre	-	6,325
100 Sq.ft	-	58

Making mud balls is labour intensive. Where paddy fields are very small and family labour is available this technique may be very helpful. Local verification trials in different agro climatic areas will be needed to evaluate the suitability of this technique for our farmers.

It will be of interest here to indicate the results of a trial conducted at Ambalantota using variety BG 90-2.

	Grain Yield in bushels per acre	
	Broadcast application	Mud ball Technique
No Nitrogen	125	
* 28 Kg. N/ha	135	137
56 Kg.N/ha	134	164
80 Kg.N/ha	155	

In this experiment, 2/3 of urea applied as basal, and 1/3 at 8 weeks after transplanting. All plots received equal amounts of Phosphorous and Potassium fertilizer.

වී වගාවට යූරියා යෙදීමේ නව ක්‍රමයක්

ගොයමට, මතුපිට පෝර යෙදීමේදී පීවාත්තක පොහොර වැපුරූ විට, යෙදූ පීවාත්තක වලින් 28% ක් පමණ පැලෑටි උරාගනී. මඩ ගුලි වල පීවාත්තක පොහොර තැත්පත් කර, කුඹුරු පසේ සෙන්ටි මීටර් 10 ක් ගැඹුරට තැත්පත් කිරීමෙන්, යෙදූ පීවාත්තක වලින් 68% ක් පමණ ගොයම් පැලෑටිය උරාගනී. මඩ ගුලි අග්ගලා හැඩයට, එම ප්‍රමාණයට, සාදාගත හැ. අතේ මහපටහිල්ලෙන් මඩ ගුලියෙහි සිදුරක් සාදා එම සිදුරට යූරියා ග්‍රෑම් 1 ක ප්‍රමාණය යොදන්න. (කැපූ තේ හැඳි 1/2 ක් යූරියා ග්‍රෑම් 1ක් පමණවේ.) එම සිදුර වසා ගොයමේ පඳුරු 4 ක් මැදට එක ගුලියක් දමා සෙ.මී. 10 ක් පමණ ගැඹුරට තැත්පත් වන සේ පයින් පාගන්න. යූරියා අඩංගු මඩ ගුලි පැය 24 ක් ගතවීමට පෙර කුඹුරට යෙදිය යුතුය.

யூரியா வளமாக்கி பாவிப்பதால் நெற்பயிரிலிருந்து அடையக்கூடிய சிறந்த பலாபலன்கள்.

அம்பலாந்தோட்டை விவசாய ஆராய்ச்சி நிலையத்தில் பிஜி 90.2 என்ற நெல்விற்கு வெவ்வேறு முறைகளில் நைதரச வளமாக்கி பிரயோகத்தின்போது இந்த பலாபலன் கண்டறியப்பட்டது.

பரிசோதனை முறைகள்	தானிய விளைவு கி/ஹெக்
1. நைதரசனின்றி	6334
2. 28 கி/ஹெக் நைத. வீச்சு விதைப்பு	6823
3. 28 " " " சேற்று விதைத்தல்	6966
4. 56 " " " வீச்சு விதைப்பு	6799
5. 56 " " " சேற்று விதைப்பு	8306
6. 80 " " " வீச்சு விதைப்பு	7839

2/3 இல் பகுதி நைதரசன் அடிக்கட்டு உரமாகவும் 1/3 பகுதி நாற்று நட்டு 8வது கிழமையின் பின் இடப்பட்டது.

1/3 இல் நைதரசன் அடிக்கட்டு உரமாகவும் 1/3 பகுதி நாற்றுநட்டு 4வது கிழமையின் பின்னும் மிகுதி 1/3 நாற்றுநட்டு 8வது கிழமையின் பின்னும் இடப்பட்டது.

(22) எல்லாப் பரிசோதனை துண்டங்கட்கும் ஒரே அளவினதான பொற்றாசியம், பொஸ்பரஸ் வளமாக்கிகள் உபயோகிக்கப்பட்டது.

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