A MODIFIED DRY SOWING TECHNIQUE FOR RICE

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In Vavunikulam area rice is cultivated under tank irrigation. Land preparation takes about 2 months. Sowing is done very late, near the end of the rainy period. The farmers wait till the tank is at least half full to start tillage operations. A constant stand of water is maintained in the liyadde when the crop is growing. Most farmers feel that the collected water may be insufficient for a second rice crop and therefore irrigate the plots liberally during Maha Season.

For a very long time these paddy fields had not been cultivated during Yala although this tank irrigation scheme was desig ed to supply irrigation water for both Maha and Yala rice crops.

The failure to grow Yala rice-crop was due to :-

- low rainfall
- low quantity of water inthe tank
- adoption of cultivation practices that are wasteful of water.

To encourage cultivation of rice during Yala seaon, introduction of dry sowing technique to Vaunikulam area appears to be helpful. Because the soil in Vaunikulam area is hard, the soil should be lightly wetted before ploughing. Therefore a pre-wetted dry sowing technique was tried at Vaunikulam in 1978 Yala season.

Method used:

A block of land (1¼ acres) with large liyaddas (and in close proximity to the irrigation source) was chosen. This block (it had 7 liyaddas) had been uncultivated during the past six months. The soil was dry. The land was wetted with a small quantity of water to facilitate easy ploughing. Tillage implements popular in the area were used for tilling seperate liyaddas to evaluate quality of tilth obtainable by using them. All the plots were wetted (irrigated) and tilled except one liyadda (Plot No.7). This liyadda was too wet and 1st illage was not done. All the 7 liyaddas (plots) were tilled again

Observations:

* A light wetting (irrigation) of the soil is adequate to condition the soil for easy Tilling .
* Quality of tiller depends on:
  - soil mosture content, and
  - the implement used.
* For example use of the country plough gave a rough tilth while the rotavated plots had a fine tilth.

Seeding and germination:

After second tillage the plots were seeded. No irrigation was done as the soil appeared to be moist enough to allow the seed to germinate.

Ten days after sowing, the number of rice seedlings and weed seedlings in each plot was counted. For this purpose two guadrants of 1 M^2 each was selected at random. Results are given in Table 3.

Table 3: Germination of dry sown rice seed and emergence of weeds in a area of 1 Square meter.

Plot No.	Rice seedlings per M^2	Weed seedlings per M^2
1	83	2
2	45	3
3	57	7
4	35	2
5	81	9
6	100	4
7	149	2

Observations on germination:

Germination of dry sown rice seed appeared to be directly related to the moisture content of the soil. Rice seedlings were inspected and most of them had emerged from seed buried at about 2" depth. Lowest germination occured in the plot rotovated with the 2 wheel tractor. This was probably due to quick drying of the top soil which was pulverised into fine particles.

The plant density even at the lowest germination level may be considered adequate (35 seedlings per M^2), because transplanting rice seedlings at 8"x8" spacing gives only 25 hills per square meter.

Seedlings appeared healthy and their growth was normal.

Weed Population:

Weed growth was unusually low. The upper most area of soil (from the surface to about 2" depth was so dry that neither rice nor weed seeds present in the top most 2" layer of soil could germinate.

Irrigation:

The first irrigation was done 10 days after sowing. Three days later a spurt of new growth was noticed. Five days after the first irrigation rice and weed plants in the same 1 M^2 quadrants were counted. The results are given in Table 4.

Table 4.: The number of rice and weed seedlings after irrigating a dry sown rice crop. (15 days after sowing)

Plot No.	Rice seedlings per M^2	Weed Seedlings per M^2		
		Broad leaved weeds.	Grasses & sedges	Total weed seedlings.
1	185	65	48	115
2	40	308	83	39
3	110	98	32	130
4	120	63	62	125
5	135	19	25	44
6	188	22	33	55
7	212	12	19	26

Observation on irrigation:

* Delayed irrigation produced plants at two stages of growth.
* Germination percentage is higher and growth of rice plants is more uniform if irrigation is done on 2nd or 3rd day after sowing.
* Irrigation promotes germination of weeds too. Therefore application of a weedicide becomes necessary. (In 1978 Yala season Satonil was applied and the results were very promising).

Summary:

* Pre-wetting of (Reddish brown earth) soil with a light irrigation facilitates easy tillage.
* Commonly used tillage implements can be used to prepare soil for dry seedlings of rice.
* Dry sowing can be done within a week of dry tillage of soil.
* Irrigating the land immediately after dry sowing results in -
  - Uniform germination of rice seed,
  - Abundant weed growth.

Discussion and conclusions:

- A light irrigation and subsequent dry tillage of soil and dry seedings of rice can be done on Reddish brown earths soil in Vavunikulam area. If this method is adopted irrigation water can be saved both directly and indirectly.
- Adoption of dry tillage reduces the time required for land preparation from 30 days (for wet tillage) to 7 days.
- Dry tillage and dry seeding techniques can be made use of both in Maha and Yala seasons.
- If dry tillage is adopted in Maha season it helps to avoid use of stored water in the tank and thus helps to enhance cropping intensity of paddy land.
- Immediately after harvesting a rice crop if the land is ploughed (making use of the residual moisture in the soil) the need for primary tillage operation again may not become necessary for the following crop.

In an irrigation project, irrigation efficiency and water use efficiency are important aspects. Modified dry sowing techniques are helpful to improve water use efficiency and maximise rice production, by utilising the available water in a more efficient manner.

SOIL AND CROP MANAGEMENT

Increasing nitrogen use efficiency in transplanted rice by blending urea with margosa seed cake powder

Margosa (*Azadirachta indica*) seeds contain an alkaloid called *nimbidin* that inhibits soil nitrification. Margosa cake is cheap and locally available at several places in India. Used in combination with urea, it can increase nitrogen use efficiency in rice. However, when powdered country-pressed deoiled margosa cake is mixed with urea (15-30% wt/wt) the two do not adhre.