
DEMONSTRATION WORK IN RICE CULTURE FOR FARM SCHOOLS.

By ELADIO SABLAN, Instructor in charge of Demonstration Work, Central Luzon Agricultural School.

The fact that the pupils attending a farm school are not ready to understand technical explanations of every day physical phenomena makes it difficult for the teacher to make classroom instruction interesting. In order to show the pupils how rice lives and produces a crop, and to demonstrate its behavior under various conditions and different treatments, no better method can be employed than that of requiring the pupils to plant and take care of individual plots.

All students learn largely through seeing. They might be able to recite perfectly on seed selection, preparation of seed beds, irrigation, fertilization, and thorough preparation of the fields, but they might not apply this knowledge in the actual practice of farming at their homes. Some may be sceptical, and they must be shown by successful demonstrations what thorough preparation of the fields will accomplish. Demonstration work should, therefore, be concrete and practical, and it should deal only with specific problems.

Let the students carry on their work in a systematic and orderly manner. Let them make and report their close observations on the life of rice, such as germination of seeds, proper time for irrigation, stooling of rice, control of water in the paddy, time of flowering, harvesting, stacking or curing, threshing, milling and storing. A plan for demonstration work in rice culture, which can easily be carried out at farm schools, is here given.

The plots.—The plots should be so located that they can be watered easily. They should be laid out in squares each containing one are, 100 square meters, inside measurement. The dikes inclosing these plots should be strongly built to prevent leaks. Each square is to be planted with rice under special conditions, to illustrate some definite truth regarding rice production. For the purpose of showing the effect of water or of fertilizer, there must be a check plot, one in which plants are grown under natural conditions for comparison with those raised under scientific treatment, the results to be compared after harvesting.

(a) *Comparative tests in the preparation of the seed bed for rice.*—The object is to show which method is best. There are two general ways of planting seed beds. The others are mere modifications of either one of these. "Bakal" designates the dry method; and "sabog," the wet method. In bakal as well as in sabog, late and early varieties of rice should be tried. Again, the seed beds may or may not be fertilized. If the bakal method is used the seed bed is worked thoroughly only when the soil is moist, so that the surface will be covered with soil particles resembling pea gravel of about one centimeter in diameter. Twenty to fifty seeds are drilled in holes two to three centi-



The suyod, or rice harrow, is the most convenient implement for puddling.

meters deep. These are in rows ten centimeters apart each way. These plots are not irrigated, but they depend entirely on the rain.

The sabog method is to flood the plot with enough water so that when finished there will be water to be thrown out. Then it is plowed and harrowed with a suyod until it is puddled, leveled by means of a banana stem, and allowed to settle. In the meantime, the sack of seeds, $\frac{1}{2}$ cavan to an are of seed bed, should be soaked in water for 36 hours. After this the contents should be poured out in a dry, cool place and kept covered with wet sacks for from 6 to 8 hours, at the end of which time the seeds are ready to be sown broadcast in the seed bed. If at the time of broadcasting there are heavy rains, the seeds should be

properly covered with mud. Otherwise, a bunch of bushes may be used lightly to cover the seeds. Germinating seeds need air, and seeds fail to germinate when covered with water. Seedlings of early varieties should be transplanted when they are from 30 to 35 days old, while seedlings of late varieties should be transplanted when from 40 to 45 days old. After 45 days the plants form nodes, and in this stage transplanting is likely to injure the plants to such an extent that they will fail to stool and head properly. It is better to plant young seedlings than old ones.

(b) *The preparation of fields.*—This exercise requires three plots planted with only one variety. They should differ in their



The whole class may take part in the preparation of seed beds.

preparation; thus, plot 1 is well prepared, thoroughly plowed and harrowed, clean and level, with good strong dikes. Plot 2 is poorly prepared, weeds being left through hasty plowing and harrowing. Plot 3 is carelessly prepared, with stumps of trees or nests of any left on it. Care should be taken that the transplanting is done on all plots at the same time.

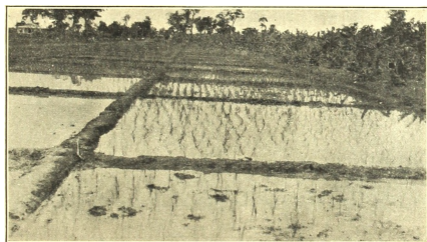
(c) *The distance between hills in transplanting.*—For this experiment four plots should be prepared and planted with one variety. The conditions should be the same except for a difference in the spaces between the hills. In plot one, the hills should be 10 centimeters apart each way; in plot two, 20 centimeters; in plot three, 30 centimeters; in plot four, 40 centimeters.

(d) *Irrigation.*—To show the effect of water on rice, several

plots should be prepared in two rows. Both rows should be transplanted to early and late varieties, grown side by side. One row should have water every day, while the other should not be irrigated at all. Care should be taken to maintain a broad dike, strong and compact, between the two rows.

(e) *Fertilizers.*—The fertilizers to be used should be the commonest, cheapest, and most abundant. There should be at least seven plots prepared in the same way from one seed bed, but each receiving a different treatment. They may be arranged as follows:

1. No fertilizer.
2. Stable manure, 20 cubic meters per hectare.



These 2 rows of rice plots, each containing 54 squares, 10 by 10 meters in area, show the extent to which experimental work in rice culture is being carried on.

3. Ashes, 10 cubic meters per hectare.
4. Green manure at the rate of 40 tons per hectare.
5. Canal mud, heavy application.
6. Composts, 6 tons per hectare.
7. Stable manure and ashes, 20 cubic meters per hectare.

(f) *Variety tests.*—There should be as many plots as there are varieties of rice to be planted. In the matter of preparation and irrigation, the plots should be treated exactly alike. There must be careful observation of the life of the plant. The time of flowering and maturity, susceptibility to fungus disease and insect pest, production of suckers or stools, and yield, should all be the subject of accurately made notes. There should be pure-bred seeds, seeds not selected, early and late varieties, and bearded and non-bearded varieties.

(g) *The season for planting.*—At least three plots should be devoted to this exercise. The first one should be early planting, July 7; the second should be medium planting, August 7; the third should be late planting September 7. The dates given apply at the Central Luzon Agricultural School. The plots should be planted with one variety, but from different seed beds.

(h) *The kinds of soil.*—If in the vicinity of the school there are available places where different kinds of soil exist, they may be planted with one variety of rice. Both plots ought to have about the same water supply. The yield per are should be determined. The class might also visit distant fields to observe the effect of different soils.

(i) *Different methods of planting rice.*—(1) American; the seeds are drilled in by machines, but where these are not to be



Each square represents a problem of its own.

had, the work can be imitated by hand, in a well-prepared plot. When the seedlings develop two leaves, the plot should be irrigated. This should continue at frequent intervals until flowering time. (2) Italian; the seeds are sown broadcast on a plot the surface of which has been pulverized and lightly covered with soil. (3) Chinese; the seeds are first planted in a seed bed, bakal or sabog, and afterwards they are transplanted into a puddled field. There should be only one variety for all of these plots.

The conditions under which plants are to be grown must be carefully determined from the beginning, and strictly maintained to the end. The object is not to get a harvest, but to show how rice responds to different treatments,—irrigation, thorough preparation, and fertilization. It is necessary to have a suyo or rice harrow with which thoroughly to prepare the rice land. The best time to carry out this demonstration plan in a given

locality, is during the rice-growing season, so that when the seedlings are ready to be transplanted a sufficient supply of water will be assured. At the Central Luzon Agricultural School seed beds are prepared from May to June, and transplanting takes place between July 5 and August 25. Conditions being normal, the maximum crop can be harvested only at its proper season. At harvest time attention should be given to the selection of seed from all of the plots. The seeds kept should be carefully stored in strong sacks with good labels.



It is a good plan to have two boys responsible for a single square.

Each of the plots should have a signboard, on which should be painted the number of the plot, variety of the rice, treatment of the plot, and the date of transplanting. The most convenient size for the board is 15 by 60 centimeters.

An irrigation ditch should be built along the side of the rows of plots, so that each of them can be easily watered. The dikes should be 1 meter wide and 50 centimeters high. The fertilized plots should be so arranged that in irrigating, the water will not pass from the fertilized to the unfertilized plots. The rice-growing period at any given place may be different from that in another. The season should be carefully followed in each locality, in order to solve practical field problems in rice culture.