

NITROGEN FERTILIZER MANAGEMENT AND WEED CONTROL

METHOD IN RAINFED LOWLAND AND UPLAND RICE

BY

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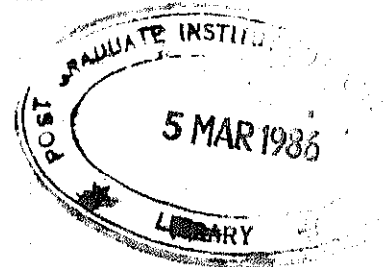
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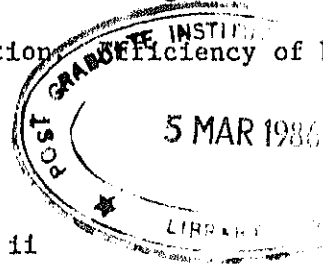
ABSTRACT

Four field experiments, two in rainfed lowland and two in upland, were conducted at the International Rice Research Institute (IRRI) experimental farm, Los Baños, Laguna, Philippines from September 1983 to June 1984.

Three rainfed lowland rice varieties, namely, short early-maturing IR36, intermediate statured medium-maturing UPLRi-2, and semidwarf late-maturing IR42, with three N levels (0, 45, and 90 kg/ha), and two methods of application (band placement and broadcast) were tested during the wet season. In the second experiment, the same rice varieties were tested with three herbicides along with unweeded and hand weeded control. The third experiment tested three upland rices, namely, traditional tall Kinandang Patong, semi-dwarf IR43, and medium tall UPLRi-5 with two N levels (0 and 90 kg N/ha) and three N application time and methods under five water regimes. In the final experiment, the same three upland rices with two herbicides including unweeded and hand weeded control were tested under five moisture regimes.

Broadcast N application at 90 kg N/ha gave significantly higher grain yield than at 45 kg N/ha in IR36. In IR42, band placement at 90 kg N/ha gave significantly higher grain yield compared to broadcast application at 45 kg N/ha. UPLRi-2 did not give significant increase in grain yield as affected by N rate and application methods tested.

UPLRi-2 proved superior to others as it gave the highest yield and was least affected by weed infestation. Efficiency of hand weeding



twice, butachlor fb hand weeding, pendimethalin fb hand weeding and pendimethalin fb 2,4-D were superior to the butachlor fb 2,4-D.

Among the upland rice varieties, the traditional variety gave consistent performance with respect to grain yield both under fertilized and unfertilized plots at moisture deficit condition. Applied N (90 kg N/ha) significantly increased grain yield of all varieties but the application methods and moisture levels did not have significant effects. The curvilinear relationship between drought reaction score and leaf rolling score indicated the adaptability of the tested varieties under upland condition. Nitrogen application reduced the leaf water potential of rice plant.

Among the different weed control methods followed (hand weeding thrice, pendimethalin fb hand weeding, and pendimethalin fb propanil), hand weeding thrice was the best. Increasing levels of moisture increased leaf water potential, panicle number per square meter, and grain yield. Lower moisture level was found responsible for producing high unfilled spikelet percentage in all varieties.

