Thesis title Effects of plant density , planting methods and spacings on yield and yield component of upland rice .

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ABSTRACT

Two Experiments were conducted at Khon Kaen University from June to November 1986.The main purpose of these experiments was to study the effect of plant density,planting methods,and spacing on economic yield and yields components of upland rice.

The objective of the first experiment was to study the effect of varying plant population density on growth , economic yilds,and yield components of an improved and traditional upland riec varieties by using a fan systematic design. The plant samples were taken from 4 to 457 hills per sq. meter. Increasing plant density from 4 to 7 hills tended to increase economic yield per area of both rice varieties. Economic yields per area, however, were stable when the plant density was increased from 7 to 84 hills per sq. meter. When the plant density was increased from 84 to 457 hills per sq. meter,economic yields per area were

fluctuated to a great extent. Economic yields per area harvested from 4 to 457 hills per sq. meter ranged from 151 to 368 gram per sq. meter.At low plant density, upland rice increased biological yield per area by increasing number of tillers per plant and increasing leaf area index. Plants at low density also had a higher number of filled grain per panicle than those at higher density. Plants at extra ordinary high plant density had much lover tiller number per plant, had less number of filled grain per panicle, and displayed higher percentage of unfilled grain. As a consequence, plants from all density treatments showed only two times difference between lowest and highest economic yield per area whereas the difference in plant density was as great as 110 times.

The second experiment had an aim to study suitable planting methods and row spacings for an upland rice variety, namely , Siew Mae Jan. The experimental design was a randomized complete block with 9 treatments and 4 replications. The treatments included three planting methods in combination with 3 row spacings at 20, 30, and 40 cm. apart. The three planting methods included planting by dibbling in hills, dibbling within furrow, and banding within furrow. Dibbling in hills and dibbling within furrows had the intrarow spacing at 20, 30, and 40 cm. apart. All treatments received the same seeding rate at 50 kg. per hectare. It was found that from 26 to 83 days after planting , narrow spacing at 20 cm. apart consistently produced highest biological yields per area among row-space treatments. At 69 and 83 days after planting , banding within furrow at 20 cm. row spacing gave the highest biological yield per area among the all planting treatments. Economic yield per area from all treatments did not differ significantly except the dibbling within furrow treatment at 30 cm. row spacing, which gave the hight economic yield at 2050 hg. per hectare. Similarly to the

results obtained from the first experiment ; rice plants appeared to be able to compensate yields by adjustment of yield compoments when being planted at different hills per area.