ABSTRACT

SUSILAWATI. Agronomy of Ratoon in Rice Genotypes Potential for Tidal Swamp Land. Under supervision of BAMBANG S PURWOKO as chairman, HAJRIAL ASWIDINNOOR, EDI SANTOSA as members of the advisory committee.

Ratoon is re-growth of rice plant after the main crop which can be harvested when it bears good panicles. Ratoon can be beneficial for its additional yield with low input and hence efficient in time, labor and cost. Hybrid and new plant type varieties have the advantage in morphology, physiology and yield. Ratoon production can be affected by genotypes and cultural practices. Thus, suitable genotypes and production technology should be identified. The objectives of the study were to evaluate and obtain rice genotypes with high ratoon potential and determine some factors contributing to high ratoon production. Five studies were conducted as follows (1) Performance of new plant type varieties and lines in ratoon system, (2) Evaluation of ratooning ability of hybrid and inbred rice varieties, (3) Effect of cutting height on ratoon production, (4) The role of nutrient N, P and K on the growth and development of ratoon, and (5) Effect of water level during reproductive periods on ratoon agronomy and physiology. The results showed that among 18 genotypes of new plant type of rice, there were three genotypes having high ratoon potential namely Cimelati with ratoon production of 52.8% of the main crop, IPB106-F-8-1 (54.7%) and IPB106-F-10-1 (110.2%). Hybrid varieties showed higher vigor than inbred varieties and correlated well with ratoon yield. Among the twelve hybrid and inbred rice varieties, two hybrid varieties, i.e. Hipa-5 and Rokan yielded ratoon 75.9% and 99.3% of the respective main crops. From the first two studies, five genotypes were selected for field test (Hipa-5, Rokan, Cimelati, IPB106-F-8-1 and IPB106-7-47-DJ-1. IPB106-7-47-Dj-1 replaced IPB106-F-10-1 since the latter seed was not available. In the field test, cutting height of 10 cm above the ground was the best for IPB106-7-47-Dj-1 and IPB106-F-8-1 lines, with the highest production of ratoon 1.5 t/ha (35.4% of main crop) and 2.1 t/ha (45.8% of main crop), respectively. Cutting height of 20 cm was shown to increase ratoon growth, vigor and uniformity of ratoon. Cutting height 20 cm was the best for Cimelati new plant type, Hipa-5 and Rokan hybrid varieties, with production 3.0 t/ha (57.2% of main crop), 2.8 t/ha (60.1%) and 2.2 t/ha (52.7%), respectively. Almost all the genotypes responded to N fertilization either in combination with P or K. There were three genotypes which obtained the highest ratoon yield at 45 kg/ha N + 27 kg/ha P2O5 (D1), i.e. IPB106-7-47-Dj-1 and IPB106-F-8-1 and Rokan varieties at 1.6 t/ha, 1.8 t/ha and 2.9 t/ha, respectively. Two other varieties produced the highest ratoon yield at level of fertilization 45 kg/ha N + 30 kg/ha K2O (D2), i.e. Hipa-5 and Cimelati (2.8 t/ha and 3.0 t/ha, respectively). Study on water level showed that for IPB106-F-8-1 level of water 0 cm - 2 cm increased the number of grain of main crop and ratoon with total up to 200 grains/panicle, and increased the number of filled grain of ratoon. The level of water 2 cm increased the content of sucrose and total chlorophyll, but only Hipa-5 varieties was significantly different. Ratoon yield of Hipa-5 varieties was about 66.0% of the main crop yield. In general, ratoon developed within 2-7 days after harvest, with
2-4 leaves/tiller. Ratoon harvest in the field was about 10 days shorter than in the greenhouse.

Key words: agronomic characters, applied fertilizer, cutting height, hybrid and inbred varieties, new plant type, ratooning ability