

DEVELOPMENT OF UPLAND RICE VARIETIES ADAPTED TO HIGH ALTITUDE AREAS IN INDONESIA

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Abstract

Upland rice in Indonesia is cultivated in diverse geographical areas from low to high altitude. In contrast to low altitude upland areas, rice cultivation in high altitude areas are still limited even though potential areas suitable for rice growing is large. The main constraint of rice cultivation in the high altitude areas is low temperature stress. Farmers in these areas are still cultivate traditional rice varieties since improved varieties specifically released for the areas are not available yet. Therefore, breeding program to develop upland rice suitable for high altitude areas were initiated through conventional approach. Traditional rice varieties were used as donor for low temperature tolerance. The combination of modified bulk population method in early generation and pedigree method in later generation were used to select promising breeding lines. Selection and evaluation of breeding materials were conducted in high elevation areas of 900 to 1200 meter above sea level with the average temperature of about 19-23°C. Multi-location yield trials were conducted during the wet season 2015-2016 to assess yield stability of 12 promising upland rice breeding lines selected in high altitude areas. Participatory varietal selections were also used to determine farmer's preferences on upland rice varieties. A number of high yielding breeding lines revealed through multi-location yield trial which are potential to be released as new varieties for high altitude upland rice. However, more efforts are still needed to develop breeding rice lines which have shorter duration when cultivated in high altitude areas. This presentation will describe the progress in the development of upland rice breeding lines adaptable to high altitude areas in Indonesia.

Key words: rice, upland, high altitude, cold stress