



## Research Article

# PRODUCTIVITY LOW LAND RICE (*Oryza sativa* L.) IN 'SOBARI' ON VARIOUS WEED CONTROL

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**Abstract-** Weed in rice cultivation SOBARI (System of Organic Base on Aerobic Rice Intensification) is an important issue and necessary to receive special handling. The objective of this study was to find ways the most effective weed control and efficient in rice cultivation on SOBARI system. Experiments conducted in paddy fields SPLPP Faculty of Agriculture, University of Padjadjaran in Ciparay. The method used was experimental method with Simple Randomized Block Design (RBD) consisting of 6 treatments and repeated 4. Treatment trials are as follows: A = Without Weeding, B = weeding manually 2 times at 15 and 30 DAP, C = weeding manually 3 times at 15, 30 and 45 DAP, D = Herbicides Methyl metsulfuron+ 2,4-D, E = Herbicides Bispyribac-Sodium, F = Herbicides Penoxsulam Cyalofof-butyl. The results showed that the use of 2,4-D Methyl metsulfuron, Bispyribac-Sodium and Penoxsulam Cyalofof-butyl suppressed the growth of broadleaf weed, grasses, and sedges that had a similar effect with Weeding manually for 3 times. Weed control manually 3 times on paddy rice cultivation with planting system SOBARI give good influence on the growth and yield components and provide rice yield of 7,13 tons per ha.

**Keywords-** Rice cultivation, Rice yield, SOBARI, Weed control.

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## Introduction

Rice (*Oryza sativa* L.) is a very strategic food commodity in terms of economic, social and political. At this time, the increasing demand for rice continues to rise in line with the development of population [1]. According to the Central Bureau of Statistics [2], Indonesia's population growth rate in 2010 is 1,49 % while the rate of increase in rice production in 2013-2014 actually decreased by 0,94%. In order to offset the need for food, efforts to increase rice production need special attention. Many efforts have been made in order to improve rice production yield, but have not succeeded to produce the maximal level of production, not yet effective. SOBARI (System of Organic Base on controlled Aerobic Rice Intensification) is one of the rice production system that can increase 50-100% yield depending on variety and environment [3,4]. This technology is water-efficient, inorganic seeds and fertilizers with a focus on the utilization of soil biological strength, crop management, fertilization and water system in an integrated and planned to support and maximize the growth and development of rice plants optimally in aerobic conditions. In rice cultivation SOBARI uses a wide plant spacing, water tracing and young seedlings (7-14 days). The use of wide spacing resulted in higher weed growth than narrow plant spacing [5]. Water will stimulate weed growth compared to degraded land [6]. In addition, the use of young seeds, causing the interaction of rice plants with weeds in the critical period will be longer. Weed growth in rice plant cultivation of SOBARI is an important issue that needs special handling. Weeds interact with plants through competition to get one or more limited growth factors, such as light, nutrients, and water. The degree of competition depends on rainfall, varieties, soil conditions, weed density, weed growth, and plant age when weeds begin to compete [7]. Due to competition with weeds, rice planting can reduce yield by 30 to 47% [8]. In an effort to increase rice production, weed control plays an important role to eliminate the adverse effects it causes. Various attempts to control weeds in rice crops have been commonly carried out such as mechanical weed control and chemically or a combination of

both. Along with that, in order to obtain high rice yields at relatively low cost, it is necessary to conduct research on the productivity of rice cultivation of SOBARI system in various ways of weed control. This study aims to find ways of controlling the most effective and efficient weeds in the cultivation of rice crops with SOBARI. The results of this study are expected to provide information for all interested parties regarding weed control techniques and can provide high yields at low cost.

## Materials and Methods

The experiment was conducted in paddy fields SPLPP Faculty of Agriculture, University of Padjadjaran at Ciparay, Bandung, Indonesia at an altitude of 625 m above sea level with the Inceptisol soil type. Materials used in this study are seeds of lowland rice (*Oryza sativa* L.) cv. Ciherang, with organic fertilizer, inorganic fertilizer, metsulfuron Methyl herbicide + 2,4-D (Ally Plus), herbicide Bispyribac-Sodium (Nominee), and Penoxsulam herbicide + Cyalofof (Top Shoot). The research method used is experimental method with Randomized Block Design (RBD) consisting of 6 treatments and 4 replications. The size of each experimental plot was 5 x 6 m. Treatment experiment is: A = Without weeding, B = weeding manually 2 times (15 and 30 DAP), C = weeding manually 3 times (15, 30, and 45 DAP), D = Herbicides Methyl metsulfuron+ 2, 4-D, E = Herbicide-Sodium Bispyribac at 15 DAP, F = Herbicides Penoxsulam + Cyalofof-butyl at 15 DAP. The main observations were the percentage of weed cover, weed weight. As for the observation of responses in rice plants include: plant height, number of vegetative tillers, number of generative tillers, thousand grain weight (g), weight of grains per panicle, percentage of grain pithy and yield per plot. For statistical analysis, differences between treatments were tested using F test, whereas the test of difference of mean value of treatment was used Duncan test at 5% significance level.