

Evaluating the Impact of Single and Mixed Herbicides on Corn (*Zea Mays* L.) Growth and Yield in Dry Land

Nopit Yohanes¹, Yakup Yakup^{2*}, M. Umar Harun²

¹Master Program in Agriculture Science, Faculty of Agriculture, Sriwijaya University, Jalan Padang Selasa 524, Palembang, South Sumatra 30139, Indonesia

²Departement of Agronomy, Faculty of Agriculture, Sriwijaya Univesity, Jalan Palembang-Prabumulih km 32, Indralaya Indonesia

*Corresponding author

E-mail address: yakup.parto@yahoo.com (Nopit Yohanes).

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Abstract

The Indonesian Government's efforts to enhance Human Resource (HR) quality include ensuring adequate food production, purchasing power, access, and nutritional intake. This study aims to assess the impact of single and mixed herbicides on corn plant growth and yield. Employing a Randomized Block Design (RBD) with eight treatments replicated three times, the research was conducted from February to June 2023 at the Farmer's Gar-den. Results indicated that herbicide treatments, particularly those with atrazine + saflufenacil as the active in-gredients, demonstrated the most favorable effects on plant height at 6 WAP and 8 WAP, the number of leaves at 6 WAP, ear length, ear weight, and dry seed weight per plot. The atrazine + saflufenacil herbicide treatment had the best effect on plant height at 6 WAP and 8 WAP, number of leaves at 6 WAP, ear length, ear weight, and dry seed weight per plot.

Keywords : herbicides, atrazine, saflufenacil, nicosulfuron, corn.

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1. Introduction

The Indonesian Government aims to enhance Human Resources (HR) quality by ensuring sufficient food production, purchasing power, access, and nutritional intake—a fundamental right for global resilience. The agricultural sector's sustainability confronts challenges, notably farmer regeneration [1], involving the transition of farming activities from older to younger generations [2]. As a predominantly agricultural nation, Indonesia relies on farmers for income and food production, emphasizing their crucial role in national development [3], [4].

In Indonesia, the word food is synonymous with rice because rice is the leading staple food for society. But there are other types of food commodities, including corn (*Zea mays* L.) [5]. Corn is a cereal crop [6], corn is also a strategic commodity in the development of agriculture and the Indonesian economy [7], considering that this commodity has a multipurpose function both for food and as feed for livestock [8]. The need for corn commodities will continue

to increase for food consumption, dinner, and industrial raw materials [9]. Corn consumption in Indonesia is currently relatively high, with around 10 million tons of dry-shelled Corn per year [5]. Weeds are other plants that grow on cultivated land and grow in unwanted places so that their presence will be detrimental [8]. There are several types of weed groups, namely the grass weed group, the broad leaf weed group, and the fern weed group such as *Neprolepis bisserata*, *Stenoclaena palustris*, and *Dicranopteris linearis* [10].

Yield losses due to weeds in corn plants range between 20% - 80% [11], depending on the type and density of weeds and the time of weed disturbance [12]. Therefore, the presence of weeds must be controlled so that they do not disturb cultivated plants so that the plants obtain optimal growth. According to [13], Nutrient competition due to the presence of weeds in corn planting areas can cause significant yield losses in corn plants. Manual weed control requires a lot of labor, so manual weeding is increasingly expensive [14]. Therefore, one alternative is to use herbicides. The active ingredients contained are one factor that will determine the success of weed control [15]. Mixing several herbicides with