

EFFECT OF BISPYRIBAC-SODIUM AND SPACING ON THE WEED CONTROL AND PERFORMANCE OF AROMATIC RICE VARIETIES

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Abstract

Rice (*Oryza sativa* L.), a staple grain, serves as a fundamental dietary component for billions by providing carbohydrates, vitamins, and minerals, supporting livelihoods, and stimulating national economies. A field experiment was led from July to December 2019 at the Sher-e-Bangla Agricultural University's agronomy field in Dhaka, Bangladesh, to determine how a post-emergent herbicide and spacing impacts aromatic rice varieties' growth, yield, and weed control. The investigation consisted of three factors, i.e., weed control treatments: weedy check (no weeding) and Bispyribac-sodium WP @ 150 g ha⁻¹, aromatic rice varieties: Kalizira and BRRI dhan37 and spacing: 20 cm × 15 cm, 25 cm × 15 cm, 20 cm × 20 cm, and 25 cm × 25 cm in a split-split plot design with three replications. Thirteen dissimilar types of weeds invaded the experimental plots. Among them, *Monochoria vaginalis* was the most prevalent weed at 30 and 60 DAT (24.67 and 19.67 weed population m⁻² and 15.24 and 13.02% relative weed density sequentially). Among all the factors, the application of Bispyribac-sodium WP (W₁), BRRI dhan47 (V₂, grain yield 2.99 t ha⁻¹) and 20 cm × 20 cm (S₃, grain yield 2.87 t ha⁻¹) spacing provided promising results. According to the findings, BRRI dhan37 planted at 20 cm × 20 cm spacing, along with the suggested application of Bispyribac-sodium WP could provide the best result.

Introduction

Bangladesh, an agrarian country with a large population, relies heavily on profound rice (*Oryza sativa* L.) cultivation. According to BBS (2022), Bangladesh's agricultural sectors accounted for 11.66% of the country's GDP in the fiscal year 2021-2022. The total area covered by aman rice was speculated to be 5625907 hectares, 0.87% greater than the financial year 2019-2020. In 2020, 4.44 million hectares of cultivable land were accustomed to HYV varieties, 0.75 million hectares for local varieties, 0.31 million hectares for B. *Aman*, and 0.24 million hectares for hybrid varieties. A total of 5.71 million hectares of land were covered by the aman crop (Magzter, 2021). However, as per the Statistical Yearbook Bangladesh (BBS, 2022), *Aman* rice was cultivated for 34.11% of the gross area, and the production was 14959 MT.

Aromatic rice, known as Basmati in India, Jasmine in Thailand, and Kataribhog in Bangladesh, has a 15-fold higher amount of 2-Acetyl-1-pyrroline (2AP) (Singh, 2000). Scented rice varieties in Bangladesh are conventional, photoperiod-sensitive and cultivated during the aman season. Despite low yields, these cultivars generate higher turnover due to low cultivation costs (Tanchotikul and Hsieh, 1991).

Weeds are undesired plants that grow in locations where they are not deliberately cultivated. According to Ramana *et al.* (2014), weeds pose the greatest drawback to agricultural productivity, with losses ranging from 30 to almost 100%. According to Rao *et al.* (2007), weeds had a devastating effect on crop production caused loss of 32% across the globe. When weeds existed, the grain production of T. *Aman*, *Boro*, and *Aus* rice were lessened by 70–80, 30, and 36%, respectively, prompting increased use of herbicides for chemical weed control (BRRI, 2008).