

## Uptake of nutrients by rice and weeds of influenced by different weed management practices in drum seeded rice

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### ABSTRACT

A field experiment was conducted during summer season of 2002-03 at Zonal Agricultural Research Station, Navile, Shimoga to study the effect of weed management practices on uptake of nutrients by drum seeded rice and weeds. Pre-emergence application of sofit @ 0.45 kg a.i ha<sup>-1</sup> + passing cono weeder at 30 DAS + one hand weeding @ 30 DAS was very effective in controlling weeds throughout the crop growth in drum seeded rice, with a weed control efficiency of 98.0 per cent at 60 DAS. The highest uptake of nutrients by crop and lowest uptake of nutrient by weeds (137.5, 49.7 and 119.1, N P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O kg ha<sup>-1</sup>, respectively) and (6.62, 1.92 and 14.9 N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O kg ha<sup>-1</sup>, respectively) by pre emergence application of sofit @ 0.45 a.i. ha<sup>-1</sup> + passing cono weeder at 30 DAS + one hand weeding @ 30 DAS.

**Key words :** Uptake of nutrients, Drum seeded rice, Weeds, Herbicides and Mechanical weeder

### INTRODUCTION

Rice (*Oryza sativa* L.) is the principle food crop in developing countries and major staple food for 50-60 per cent of the world's population. The demand for rice in India is expected to be 100 million tonnes by 2010, 140 million tonnes by 2025 and 528 million tonnes by the year 2050 (Paroda, 1998; Mishra, 2002). Expansion of irrigated areas, availability of short duration rice cultivars, availability of labour, efficient herbicides, increasing transplantation costs and declining profitability of rice production under transplanted condition have forced many farmers in developing countries to shift from transplanting to drum seeding.

Weeds are the universal pest in rice and causes yield loss of 72.6 per cent in Drum seeded rice (Kolhe and Tripathi, 1998). Damage caused by weeds cannot be identified in early stage as compared to insect damage; so that weeds act as hidden war on crop plants. Yield losses due to weeds are greater in drum seeded rice. Early emergence of weeds along with crop seedlings and their rapid growth result in a severe crop weed competition for light, nutrients, moisture and space in drum seeded rice. Research results from various locations showed that herbicides alone do not solve the problem of weed control satisfactory in direct seeded rice culture unless it is supplemented with manual weeding or cultural methods. Continuous use of same herbicide or herbicides having the same mode of action may lead to the evolution of resistance in weeds (Malik *et al.*, 1992). But in this type of rice culture, weed problems are critical (Moody, 1993).

Pre emergence herbicides mainly control weeds in the earlier stages and weeds emerging at later stages of rice growth are not controlled effectively. In view of these facts, the present study was undertaken to find out the effect of different herbicides alone and in combination with other methods on nutrients uptake by weeds and rice.

### MATERIALS AND METHODS

A field experiment was conducted during summer season of 2002-03 at Zonal Agricultural Research Station, Navile, Shimoga. The soil of the experimental plot was loamy sand with a pH of 5.4. The soil was low in available nitrogen (180.0 kg ha<sup>-1</sup>), high in available phosphorus (47.0 kg ha<sup>-1</sup>) and medium in available potassium (245.0 kg ha<sup>-1</sup>). The experiment comprising twelve weed control treatments were tested in randomized block design with three replications. The treatments comprised of three, pre emergence herbicides alone, *viz*, Sofit (pretilachlor + safener) @ 0.45 a.i. ha<sup>-1</sup>, butachlor @ 0.5 a.i. ha<sup>-1</sup> and anilophos @ 0.3kg a.i ha<sup>-1</sup>. Applied 3 DAS in combination with either hand weeding or passing cono weeder or hand weeding + passing cono weeder at 30 DAS. Besides, hand weeding alone, passing cono weeder + hand weeding alone at 30 DAS were compared with weedy check. Weed density, dry weight and yield of rice were recorded. The crop was irrigated as and when required. Crop and weed samples were analyzed to find out the uptake of nitrogen, phosphorus and potash by crop and weeds at harvest by adopting modified Kjeldahl,

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