

Response Of Blond Psyllium (*Plantago Ovata* Forsk.) To Irrigation And Nitrogen Fertilization

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ABSTRACT

A field experiment was conducted at Rajasthan College of Agriculture, MPUAT, Udaipur during rabi 1998-99 to 2000-2001 to study the effect of irrigation and nitrogen fertilization on yield and quality of Blond psyllium. Three irrigation schedules, viz; 2 irrigations (at tiller initiation and full tiller stages), 3 irrigations (at tiller initiation, full tiller and 75% flowering stages) and 4 irrigations (at tiller initiation, full tiller, 75% flowering and seed development stages) were tried at 3 nitrogen rates (15, 30 and 45 kg/ha) in split plot design with 6 replications. Results showed that application of 3 irrigations resulted in significantly higher plant height, effective tillers per plant, spike length and seed yield compared to 2 irrigations. Variation between 3 and 4 irrigations with respect to these characters was found non significant, except husk yield which was significantly higher due to 3 irrigations compared to 4. Swelling factor and husk recovery of seeds were reduced when irrigation intensity was increased. Increasing levels of nitrogen up to 30kg/ha significantly increased effective tillers per plant, spike length, seed yield and husk yield but a significant reduction in swelling factor and husk recovery of seeds was observed due to increase in nitrogen rates. Plant height, however, was increased significantly up to 45 kg N/ha.

Key words: Blond psyllium, nitrogen, irrigation, swelling factor, husk recovery.

INTRODUCTION

Blond psyllium (*Plantago ovata* Forsk.) locally known as Isabgol is a winter season crop, the seeds of which are valued for mucilaginous rosy white husk, which is used against constipation, irritation of digestive tract etc. In addition, it is also used in food industries in various preparations. India is the leader in Blond psyllium production and largest exporter of husk and seed. On an average, export worth of about Rs.1600 million is done annually. In spite of such high market potential and importance of the crop the agronomic aspects, particularly irrigation based on critical physiological growth stages and nitrogen fertilization for Blond psyllium are still not developed and studied in detail.

Irrigation water is a costly and scarce resource and availability of water to agriculture is expected to reduce. Therefore, scheduling of irrigation at moisture sensitive and more responsive stages of plant growth is need of the moment. Nitrogen is vitally important plant nutrient. Though, Blond psyllium is a non exhaustive crop Gupta, (1982), an adequate supply of nitrogen is associated with its vigorous vegetative growth and better yield and quality with regards to its texture and uniformity of seeds. The higher rates of applied nitrogen, however, decreases the swelling factor of seeds which is not desirable Kalyansundaram *et. al.*,(1982).

Therefore, it is necessary to find out appropriate dose of nitrogen, which would maximize the seed yield without deteriorating the quality of produce. Hence, the present experiment was conducted to determine suitable irrigation schedule based on critical physiological growth stages and nitrogen rates for Blond psyllium crop.

MATERIALS AND METHODS

Field experiment was conducted at Rajasthan College of Agriculture, Udaipur (Rajasthan) for three consecutive years 1998-99 to 2000-2001 on clay loam soil medium in organic carbon (0.72 per cent), available nitrogen (279.1 kg/ha), phosphorus (21.8 kg/ha) and potassium (261.2 kg/ha) having alkaline reaction (pH 8.1). Three irrigation schedules viz. I₁ = 2 Irrigations (at tiller initiation and full tiller stages), I₂ = 3 Irrigations (at tiller initiation, full tiller and 75% flowering stages) and I₃ = 4 Irrigations (at tiller initiation, full tiller, 75% flowering and seed development stages) were tried at three nitrogen rates (15, 30 and 45 kg/ha) in split plot design with 6 replications keeping irrigation in main plots and N fertilization in sub plots. Half dose of N (as per treatment) and uniform doses of P₂O₅ and K₂O each at 15kg/ha were applied at sowing by drilling below the seed, while remaining half dose of N was applied as top dressing alongwith first irrigation. The Blond psyllium

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