

Validation of Significant Varieties and Crop Management Practices of Mustard (*Brassica juncea*) at Farmer Fields in Transitional Plain of Luni Basin of Rajasthan

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Abstract: A study was carried out to validate the varieties and crop management practices of mustard at farmer's fields in Transitional Plain of Luni Basin of Rajasthan. Varieties Urvashi, RRN-505, GM-2 and JM-1 provided higher grain yield than average. Seed soaking in 500 ppm thiourea for 4 hrs before sowing and foliar spray of 1000 ppm thiourea at flowering and grain filling stages enhanced mustard yield by 18.93% and 21.71%, respectively; however, foliar spray of 100 ppm salicylic acid provided 12.88% yield enhancement. Application of recommended dose of fertilizers 60 kg N and 40 kg P per hectare provided 22.95% higher yield over farmer's practice. Foliar fertilization of 1.0% soluble NPK at flowering stage also enhanced mustard grain yield. Soil application of gypsum @ 250 kg ha⁻¹ enhanced mustard yield by 21.51% under irrigated problematic soil and water situations.

Key words: Bio-regulator, grain yield, gypsum, mustard, nutrient management, varieties.

Mustard (*Brassica juncea*) is an important oilseed crop for the state of Rajasthan. It is cultivated under irrigated as well as conserved moisture conditions. The area of mustard under conserved moisture depends up on the amount and distribution of rainfall during preceding season. In Rajasthan, mustard has occupied an area of 25,21,292 hectare (average of 2008-09 to 2012-13) with annual production of 33,94,386 tonnes. It is grown in all parts of Rajasthan but major area has been covered by district Alwar, Bharatpur, Sriganganagar, Sawai Madhopur, Jaipur and Hanumangarh. The average productivity of mustard in Rajasthan ranged between 614 kg in district Jaisalmer and 1695 kg ha⁻¹ in district Bharatpur with the state average of 1346 kg ha⁻¹ (Anonymous, 2013-14).

A large number of research experiments have shown that crop productivity may be enhanced considerably through improved varieties and crop management practices but their adoption at farmer's fields is poor because of weak research-extension linkage. Farmer participatory action research is a sound research oriented extension programme, where farmers have an option to choose best variety and crop management technology for their own field situation (Sharma, 2014). Present studies were

conducted with the objectives of validation and transfer of technology at farmer's fields in Transitional Plain of Luni Basin (Zone IIb) of Rajasthan.

Materials and Methods

Four separate experiments on mustard were conducted at farmer's fields in Transitional Plain of Luni Basin (Zone IIb) of Rajasthan (districts Jalore, Pali and Jodhpur) during rabi 2009-10. In first experiment, seven released and notified varieties of mustard were evaluated at seven locations in different parts of zone-IIb. In second experiment, four treatment combinations of nutrient management practices were tested at 8 locations. In third experiment, effect of seed soaking and foliar spray of bio-regulators on mustard grain yield was estimated at 6 locations. However, in fourth experiment, effect of soil application of gypsum on grain yield of mustard under problematic soil and water situation was tested at 11 locations. Variety Urvashi was used for experimentation. All experiments were laid out in strips in 0.40 ha. A fertilizer dose of 60 kg nitrogen and 40 kg phosphorus per hectare were applied as per the recommendation of zonal package of practices. A half dose of N and full dose of P was applied at the time of sowing in the form of urea and single super phosphate (SSP). The remaining half of the N was top dressed in the form of urea with first irrigation.

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