

Effect of seeding Method and Seeding Rate on plant stand and seed yield of Rapeseed and Mustard under Rainfed Conditions.

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ABSTRACT

Field experiment were conducted at the National Agricultural Research Centre (NARC) Islamabad, Pakistan during rabi season 1985-86 and 1986-87 to study the effect of seeding method and seeding rate on plant stand and yield of cv. Westar (rapeseed) and cv. S-9 (Mustard). Four seeding rates (4,6,8 and 10 kg/ha) were used in two seeding methods i.g. broadcast and mechanically seeded. Significant increase in plant stand resulted from increasing seeding rate from 4 to 10 kg/ha in both seeding methods. There were no significant yield differences among broadcast seeding rates in treatment with *B. Juncea*. However, significant differences among seeding rates and seeding methods in all other cases were observed. Mechanical sowing at the rate of 4 kg/ha resulted in significant yield increases compared to broadcast seeding for each species. The seeding rate of 4 kg/ha appeared to be the optimum seeding rate for these species.

INTRODUCTION

After cotton seed, Rapeseed and Mustard are the most important sources of edible oil in Pakistan. *Brassica* species, including *B. juncea* (raya), *B. campestris* (Torja and Sarson) and *B. napus* (Gobi Sarson) are grown on approximately 386,000 hectare annually. Under irrigation condition, yield generally range from 1,000 to 2,000 kg/ha while in barani (rainfed) areas yield are as low as 400 kg/ha. These yields are much below than those normally obtained from research plots (Morrison, 1986). The relatively low yields in rainfed areas are attributable to poor seedling emergence and poor plant vigor resulting in less uniform plant stand and or inadequate plant population. In Pakistan, conditions necessary for uniform plant stand are usually difficult to achieve, especially in the rainfed areas, where the seed bed is often too dry and cloddy at planting. The usual method of planting is broadcasting seed by hand and covering it at shallow depth, using a sohaga (a heavy timber flank drawn with bullocks or tractor). Broadcast seeding is some times used by rapeseed grower even in some advanced countries when field conditions are too wet to prevent or delay normal seeding operations. In the U.K., broadcast seeding of *B. napus* was found superior to drill seeding (Help, 1971), however results from experiments in Canada indicated that the drill seeding of *B. napus* is better than broadcast method of seeding and even at same seed rate for yield, especially when lower seeding rates were used (Clark, 1977). In a similar study, kondra (1975) tested *B. campestris* c.v. Span and *B. napus* c.v. Zephyr at drilled seeding rate of 2 to 8 kg/ha and broadcast rates of 3 to 12 Kg/ha, observed that the 4 and 6 Kg/ha seeding rates, of broadcast or drilled produced the highest yield.

The objective of the present study was to determine the effect of seeding method and seeding rate on plant stand establishment and seed yield of two *Brassica* crops namely, *B. napus* c.v. 'Westar' and *B. juncea* c.v. 'S-9' grown in Pakistan. The former is a recent introduction from Canada while the latter is widely grown and a well established local cultivar.

MATERIALS AND METHODS