

EFFECT OF VARYING LEVELS OF FERTILIZER ON THE SEED YIELD PERFORMANCE OF RAYA (*BRASSICA JUNCEA*) UNDER RAINFED CONDITIONS.

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ABSTRACT

The experiment was conducted at Adaptive Research Farm (Bhaun) Chakwal during 2006-2008. Four fertilizer levels 50-0, 50-25, 50-50 and 50-75 NP Kg/ha was used as treatments. Variety used was Chakwal Raya. Layout was RCBD with three replications. Study concludes that Fertilizer level of 50-50 NP Kg/ha is suitable combination to get maximum seed yield and yield components of Raya (*Brassica juncea*) under rainfed conditions.

INTRODUCTION

Pakistan is facing an acute shortage of edible oil and 70% of the country's requirements are met through import costing huge amount of foreign exchange as edible oil is the single largest food import item in Pakistan (Aslam et al., 1996). Local contribution is 31% and remaining 69% was full filled through import (Anonymous, 2005-06). Average yield of oil seeds are extremely low in Pakistan. Among factors associated with higher yield, application of optimum dose of Fertilizer is of great importance. Reddy & sinha found that application of N & P increase the seed yield of mustard linearly up to 80Kg ha and 30 Kg P ha and the effect of the Phosphorus was well marked in the presence of Nitrogen. Virma and Virma (1979) observed that application of 60Kg N and 30 Kg P ha to *Brassica Juncea* grown under rainfed conditions increased seed yield significantly. Ghosh et al (1995) reported that application of NPK fertilizers significantly increased the seed yield and oil contents of rainfed rapeseed. Bhatti et al (1975) studied effect of 80 Kg of N 80 Kg of P₂O₅ and 80 Kg of K₂O per hectare alone are in combination on seed yield of Raya (*Brassica, Juncea*). They concluded that NP and NPK combinations significantly improved seed yield.

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MATERIALS AND METHODS

The experiment was conducted at Adaptive Research Farm (Bhaun) Chakwal during 2006-2008. Four fertilizer levels 50-0, 50-25, 50-50 and 50-75 NP Kg/ha were used as treatments. Variety used was Chakwal Raya. Layout was RCBD with three replications. Plot size was 7.2 x 9.5 m. The crop was planted with the single row hand drill at 45 cm apart. All fertilizer was applied at the time of sowing. To record observations five plants per plot were selected at random. Seed yield was collected from the whole plot and conversions were made. The average of the data collected was subjected to analysis of variance. For mean comparison test of LSD at 5% probability level was applied (Steel and Torrie 1984).

Table 1: EFFECT OF VARYING LEVELS OF FERTILIZER ON THE PLANT HEIGHT, PODS PER PLANT, SEED YIELD AND SEED YIELD OF RAYA.

TREATMENTS	PLANT HEIGHT (cm)	PODS PER PLANT(Nos.)	SEED YIELD (kg/ha) 2006-07	SEED YIELD (kg/ha) 2007-08
T1 50-0 NP Kg/ha	183 N.S.	331 d	823.0 c	1867.3 c
T2 50-25 NP Kg/ha	190	426 b	2057.5 a	2342.7 b
T3 50-50 NP Kg/ha	200	533 a	2304.5 a	2827.9 a
T4 75-50 NP Kg/ha	210	392 c	1399.2 b	2130.4 b

RESULTS AND DISCUSSION.

The data presented in table 1 shows that varying levels of Fertilizers possess non-significant effects on average plant height. Maximum plant height (210 cm) was observed in treatment where 75-50 NP Kg/ha Fertilizer level was used followed by 50-50 NP Kg/ha (200cm). Non significant behavior was observed due to same levels of Nitrogen in treatments T1,T2 and T3 (50Kg/ha N) with slight increase in T4 (75 Kg /ha N) .

Data presented in table 1 depicts that Fertilizer had significant effects on pods per plant. Fertilizer level 50-50 NP Kg/ha produced with maximum pods per plant (533) followed by 50-25NP Kg/ha (426). Minimum pods per plant (331) were observed in control treatment. Phosphorus Fertilizer played more role in pods per plant as compared with Nitrogen. Ahmed et al (1989) evaluated that on average pods number per plant increased from 52.86 to 58.72 percent with fertilizer application over check and maximum pods were

observed at fertilizer rate 50-50 NP Kg/ha in all species of Brassica. Gulzar et al (1989) also showed significant behavior in this respect.

Seed yield per unit area is the prime objective of all breeding and agronomic investigations. The yield data per hectare is given in table 1. Significant differences in seed yield were observed against varying fertilizer levels during the both years. However more seed yield observed during 2007-2008 as compared to 2006-2007 due to rain fall differences during both years. Table 1 shows that seed yield is significantly affected by varying fertilizer levels. Maximum seed yield 2827.9 Kg/ha during 2007-08 and 2304.5 Kg/ha during 2006-07 was produced at Fertilizer level of 50-50 NP Kg /ha followed by 50-25 NP Kg/ha which is 2342.7 Kg/ha during 2007-08 and 2057.5 NP Kg/ha during 2006-07. Minimum seed yield was observed in control treatment. Mirza et al (1988) and Maity et al (1980) Rajput et al (1994) also recommended 50-50 NPK Kg/ha to get maximum yield of Brassica Juncea under rainfed conditions, while. Ahmed et al (1989) considered 75-50—0 NPK Kg/ha Fertilizer level with higher seed yield. Similar findings were observed by Khalid et al (2002). Maximum seed yield of Brassica is attributed to more number of pods per plant. Ahmed et al (1987) and Maity et al (1980) also correlated the same. Study concludes that Fertilizer level of 50-50 NP Kg/ha is suitable combination to get maximum seed yield of Brassica under rainfed conditions.

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