

Short Note

**Effect of genotypes under different dates of sowing on yield of linseed (*Linum usitatissimum* L. Griesb.) in Himachal Pradesh**

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**Abstract**

Sowing of suitable variety at optimum time is of primary importance among various factors responsible for higher yield of linseed. To ascertain the optimum date of sowing for linseed genotypes, an experiment comprising of three dates of sowing (*i.e.* October last week, November 2<sup>nd</sup> week and November 3<sup>rd</sup> week) and four genotypes (*viz.* 'RLC-100', 'KL-221', 'LC-54' and 'Janaki') was conducted at Palampur during *rabi* 2006-07. The crop sown on October last week gave significantly higher yield over November sown crop because of higher plant stand, growth and more capsules per plant. 'KL-221' and 'LC-54' being at par with zonal check (Janaki) resulted in significantly taller plants and higher primary branches and seed yield. 'KL-221' yielded significantly higher over other tested genotypes when it was sown during October last week.

**Key words:** Linseed, genotypes, dates of sowing, yield

Linseed (*Linum usitatissimum* L. Griesb.) is an important oilseed *rabi* crop next to rapeseed and mustard in Himachal Pradesh. Among various factors responsible for its low yield, sowing time and varietal selection are of primary importance. Sowing time is a non-monetary input, but has noticeable impact on productivity of crop. Planting dates significantly affect growth characters, yield and its component as well as oil yield in flax (Al-Doori, 2012). Sowing dates have been shown to provide differential growth conditions such as temperature, precipitation and growth periods. The appropriate sowing date is very important since it ensures good seed germination, as well as timely appearance of seedling and optimum development of the root system. Genotypes differ from each others in genetic make up for growth and yield. Fontana *et al.* (1996) tested ten linseed cultivars and observed their variation for seed yield, 1000-seed weight and oil yield. Optimum planting time range of different cultivars varies with regions depending on growing conditions of a specific tract that could be assessed by planting at different times. Therefore, to ascertain the optimum dates of sowing for linseed genotypes the present study was undertaken.

The present study was carried out during *rabi* 2006-07 at Experimental Farm of Oilseed Section, CSK HPKV, Palampur. The experiment was conducted in Factorial Randomized Block Design keeping 12 treatment combinations, comprising of three dates of sowing (October last week, November 2<sup>nd</sup> week and November 3<sup>rd</sup> week) and four genotypes ('RLC-100', 'KL-221', 'LC-54' and 'Janaki') in three replications. The crop was raised with recommended package of practices. The soil of the experiment site was silty clay loam in texture with pH 6.1 and medium available nitrogen, phosphorus and potassium. Fertilizer nutrients *viz.* N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O were applied at 50, 40 and 20 kg/ha, respectively. The crop was sown at 23 cm apart rows using seed rate of 40 kg/ha. For recording plant population, the total number of plants present in 1m row length were counted from two randomly selected places in each net plot, averaged and expressed in thousand plants/ha. Plant height, primary and secondary branches and capsules/plant were recorded from the selected five plants in each net plot. After maturity, the crop was harvested from the net plot area, sun dried and threshed with wooden mallet and the seed yield was expressed in kg/ha.

**Table 1.** Effect of linseed genotypes and seed rate on growth, yield attributes and seed yield

Treatment	Plant stand ( <sup>000</sup> /ha)	Plant height (cm)	Primary branches	Secondary branches	Capsules/ plant	Seed yield (kg/ha)
<b>Date of sowing</b>						
October, Last week	1022	57.8	5.0	1.96	29.6	1010
November, 2 <sup>nd</sup> week	929	55.0	4.6	1.85	28.0	836
November, 3 <sup>rd</sup> week	855	50.6	5.2	2.09	28.2	621
SE (m±)	16.1	0.28	0.04	0.04	0.38	22.1
LSD (P=0.05)	47.1	0.80	0.11	0.11	1.13	65
<b>Variety</b>						
RLC-100	818	43.6	4.9	1.45	26.5	701
KL-221	877	52.8	5.4	2.5	32.5	870
LC-54	934	60.6	4.2	1.70	25.3	832
Janaki	1112	60.8	5.4	2.22	30.1	885
SE (m±)	18.6	0.32	0.04	0.06	0.67	25.5
LSD (P=0.05)	54.4	0.93	0.12	0.19	1.96	75

Linseed crop sown during October last week had maximum plant stand with tallest plants (Table 1). This was followed by November 2<sup>nd</sup> week sown crop. Mean temperature of about 20°C and rainfall of 96.8 mm during October favoured germination and better establishment of crop, while, the values for these climatic parameters were below optimum *i.e.* 15°C and 22.4 mm, respectively, in November. October last week sown crop was significantly superior for capsules/plant over November sown crops. However, crop sown on November 3<sup>rd</sup> week had highest primary and secondary branches followed by October last week sown crop. Because of higher plant stand with good growth and more capsules per plant, October last week sown crop was higher yielding over November sown crops (*i.e.* November, 2<sup>nd</sup> or November, 3<sup>rd</sup> week). November 2<sup>nd</sup> week sown crop was superior to November 3<sup>rd</sup> week sown linseed for its seed yield. The increase in the seed yield due to October sown crop over November 2<sup>nd</sup> and November 3<sup>rd</sup> week sown crop was 20.8 and 62.6%, respectively. Significant reduction in seed yield and harvest index were also observed with successive delay in sowing from October to November by other workers (Shaikh *et al.*, 2009). Similarly, Chauhan *et al.* (2008) also reported that late sowing considerably reduced seed as well as stover yield of linseed. Except primary branches per plant and plant height, all other growth and yield attributes like capsules per plant, seeds per capsules, seed yield per plant and 1,000-seed weight were more under 30<sup>th</sup> October sowing than that under November sowing

(Mahapatra *et al.*, 2009).

As far as genotypes are concerned, significantly highest plant stand was recorded for zonal check 'Janaki' followed by test genotypes 'LC-54' and 'KL-221'. Zonal check 'Janaki' had significantly tallest plants with more number of primary branches. However, 'LC-54' and 'KL-221' were at par with it for plant height and primary branches, respectively. 'KL-221' resulted in significantly higher secondary branches and capsules/plant, which was followed by 'Janaki'. 'KL-221' and 'LC-54' being at par with Janaki had significantly higher seed yield (Table 1). This was due to better plant stand with more yield attributes over 'RLC-100'. Pandey *et al.* (2002) also found that the biomass and net primary productivity were comparatively higher in linseed cv. 'LC-54' than cv. NP-5. Therefore 'LC-54' has been recommended for Punjab, H.P., Rajasthan and Haryana (Singh *et al.*, 2009). 'RLC-100' had lowest plant stand with shortest plant height having fewer primary and secondary branches. The increase in the seed yield by 'Janaki', 'KL-221' and 'LC-54' over 'RLC-100' was 26.2, 24.1 and 18.7%, respectively.

Interaction effect of sowing time and genotypes was significant on plant stand and seed yield (Table 2). 'Janaki' sown on either October last week or November, 2<sup>nd</sup> week had higher plant stand over rest of the combinations. 'LC-54' sown on October last week being at par with 'Janaki' sown on November, 3<sup>rd</sup> week were the other better combination in this regard. However, 'KL-221' was also at par to

**Table 2.** Interaction effect of date of sowing and variety on plant population and seed yield of linseed

Date of sowing	Variety			
	RLC-100	KL-221	LC-54	Janaki
<b>Plant stand (000'ha)</b>				
October, Last week	908	964	1043	1175
November 2 <sup>nd</sup> week	814	857	914	1135
November 3 <sup>rd</sup> week	735	810	847	1029
SE (m±)	32.2			
LSD (P=0.05)	94			
<b>Seed yield (kg/ha)</b>				
October, Last week	843	1252	1040	903
November, 2 <sup>nd</sup> week	624	838	825	1057
November, 3 <sup>rd</sup> week	637	520	632	697
SE (m±)	44.2			
LSD (P=0.05)	130			

'Janaki' sown on November, 3<sup>rd</sup> week. 'KL-221' yielded significantly higher over 'Janaki' and other genotypes (*i.e.* 'LC-54' and 'RLC-100') sown during October last week. The 'LC-54' sown on October last week observed statistically similar to 'Janaki' sown during No-

vember, 2<sup>nd</sup> week for seed yield of linseed (Table 2).

Therefore, it can be concluded that sowing of 'KL-221' during last week of October was the best option for getting highest seed yield of linseed under mid hill condition of Himachal Pradesh.

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