ROW SPACE AND SEED RATE EXPERIMENT WITH INDIAN OILSEED MATERIAL GROWN IN SWEDEN

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INTRODUCTION

Within the Indo-Swedish joint research programme on rapeseed/mustard, Indian oilseed material was tested in different stand establishment experiments in Sweden. The purpose of the experiments is to find out the principal reaction of the Indian material to different cultivation techniques, such as different sowing and harvesting times, row spaces and seed rates.

The experiments have been running for two years and will run for a further year. The results of the first year have been published by Ohlsson et al. (1982).

MATERIAL AND METHODS

In an experiment with Brassica juncea, cv. RLM 198, the effects of row space and seed rate on the quantity and quality of the yield were investigated. The experiments followed a split-plot design with 4 replications, and was carried out at the Swedish University of Agricultural Sciences, Uppsala (59° N, 17° E) on a clay loam soil.

Two different row spaces, 12 cm and 48 cm (hoe-weeded), and four different seed rates, 1, 2, 4 and 8 million seeds per ha, were used to find out the principal reaction of the material when exposed to a higher plant density per hectare than normal in India.

The seed yield was analyzed for crude fat, chlorophyll content, fatty acid composition, crude protein and glucosinolate content of the fat-free dry matter.

RESULTS AND DISCUSSION

The results presented below are averages of two years (1981-1982). In the second year the over-all yield was remarkably lower than the over-all yield in the first year due to a dry growing period.

Effect of row space

Stands sown with 12 and 48 cm row space showed no differences in time of emergence or time for start of flowering. However, the flowering period was slightly longer in stands sown with the wider row space. The plots sown with 12 cm row space ripened some days earlier than those sown at 48 cm. The moisture content at the harvest was also higher in the seeds from the wide row space plots than from those with narrow spacing.

The results in Table 1 give the positive effects following sowing with narrow row space.

Table 1. Effect of row spacing on yield and seed quality

Yield and seed quality factors	Row space, cm	
	48	12
Seed yield, kg/ha	1109	1402
Crude fat content, % of fat-free dm	38.7	39.3
Crude fat yield, kg/ha	357	463
Crude fat yield, rel. value	100	130
Chlorophyll, ppm	128	91
Crude protein, %	44.4	44.3
Erucic acid, %	48.4	44.3

On an average of two years, the 12 cm spacing gave 300 kg/ha higher yield of seed than the 48 cm spacing. The crude fat content was 0.6 percentage units higher. As a consequence of the higher yield and the higher crude fat content, the crude fat yield was 30 percent higher with the narrow spacing. Lower chlorophyll content and better stem stiffness were other positive effects of the 12 cm spacing.

The effect of row space was statistically significant at the 0.1% level.

Effect of seed rate

Increased seed rate caused the plants in the stand to be smaller, weaker and have poorer stem stiffness.

The results obtained show that the crude fat content decreased with increasing seed rate (Fig. 1). The highest crude fat yield was obtained at a seed rate of 2 million seeds/ha when sowing with the narrow row spacing, and at 1 million seeds/ha when sowing with the wider spacing (Fig. 2). The chlorophyll content also decreased with increasing seed rate, except for a slight increase at the largest seed rate (Fig. 3).

The effect of seed rate was statistically significant at the 0.1% level.

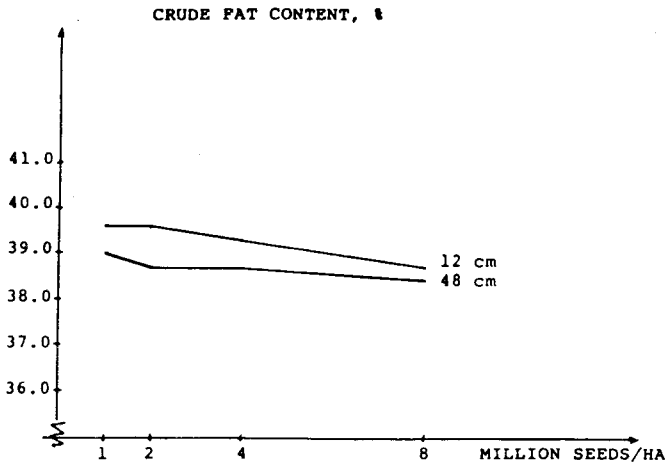

Fig. 1. Crude fat content, % of fat-free dry matter

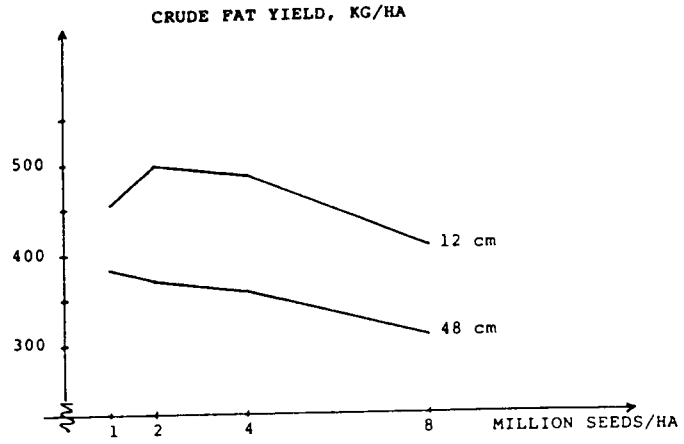

Fig. 2. Crude fat yield, kg/ha

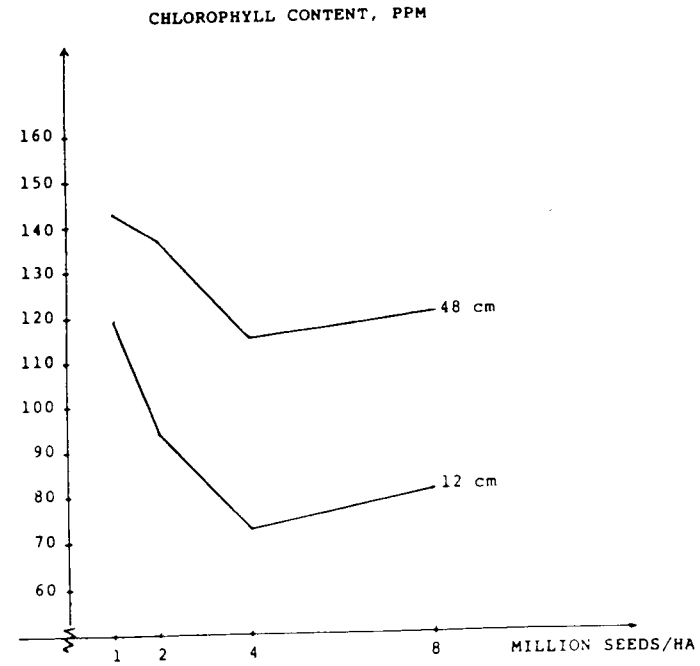

Fig. 3. Chlorophyll content, ppm

SUMMARY

In an experiment with Brassica juncea, cv. RLM 198, the effects of two different row spaces and four different seed rates on the quantity and quality of the yield were investigated.

The experiment showed that the highest crude fat yield was obtained at different seed rates at row spaces 12 cm and 48 cm. Of the four different seed rates used in this experiment, seed rates corresponding to 2 million seeds/ha (ca 9 kg/ha) and 1 million seeds/ha (ca 4.5 kg/ha) should be chosen for sowing at 12 cm and 48 cm respectively.

ACKNOWLEDGEMENT

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REFERENCES

Ohlsson, I., Nilsson, G. and Larsson, R. (1982). Stand establishment in Indian Brassica material grown in Sweden. Indo-Swedish joint workshop on rapeseed and mustard. Proceedings. 9-11 February, 1982. New Delhi.