6. SUMMARY AND CONCLUSION

The present investigation entitled "Effect of Planting Time, Spacing and Pinching on Seed Yield and Quality in African Marigold (Tagetes erecta L.)" was carried out at Chaudhary Chhotu Ram (P.G.) College, Muzaffarnagar, UP, during the year 2005-06 and 2006-07 with the objectives to standardise time of planting, spacing, pinching and their interaction effect on flowering, seed yield and quality attributes of marigold cv. Pusa Narangi Gainda. The salient findings of this investigation are summarized below:

1. Significantly lower days to first flowering (66.70) was recorded in September planting whereas November planting took the higher days to first flowering (97.71).

2. Significantly lower days to first flowering (80.43) was recorded in 30x30 cm spacing.

3. Second pinching 60 days after planting has taken higher number of days to first flowering (94.85) followed by first pinching 30 days after planting (77.12).

4. Significant interaction due to pinching time of planting for days to first flowering was recorded.

5. October planting registered the highest number of flowers per plant (37.21) followed by September planting (31.04).

6. 30x60 cm spacing produced significantly higher number of flower (34.75) followed by 30x45 cm spacing (31.98).
Second pinching 60 days after planting produced the highest number of flowers (36.02) followed by first pinching 30 days after planting (31.58).

Significant interaction for number of flowers per plant due to time of planting and spacing was recorded.

September planting produced higher plant height (57.25 cm) followed by October planting (46.58 cm).

The highest plant height (49.95 cm) was recorded in closer spacing (30x30 cm) which was at par with 30x45 cm (49.45 cm).

The maximum plant height (53.20 cm) was recorded in control (no pinching) followed by first pinching 30 days after planting (48.67 cm).

Non-significant interaction due to time of planting x spacing, pinching x time of planting, pinching x spacing, time of planting x spacing x pinching were recorded for plant height.

October planting gave maximum number of branches per plant (21.18).

30x60 cm spacing gave 20.09 number of branches per plant followed by 30x45 cm (18.83).

Second pinching 60 days after planting gave significantly higher number of branches per plant (23.21) followed by first pinching 30 days after planting.

Significant interaction for number of branches per plant due to pinching x spacing was recorded.
17 Maximum diameter of main stem (1.40 cm) was recorded in October planting.

18 The maximum diameter of main stem (1.39 cm) was noted in 30x60 cm spacing.

19 First pinching 30 days after planting registered higher diameter of main stem (1.58 cm).

20 The interactions due to time of planting x spacing, pinching x time of planting, time of planting x spacing x pinching were observed non-significant.

21 September planting gave higher seed yield per flower (0.58 g) followed by November planting (0.54 g).

22 The closer spacing (30x30 cm) gave maximum seed yield per flower (0.60 g).

23 Second pinching 60 days after planting gave higher seed yield per flower (0.57 g) followed by first pinching 30 days after planting (0.53 g).

24 Significant interaction between time of planting x spacing, pinching x spacing, time of planting x spacing x pinching were recorded for seed yield per flower.

25 The maximum seed yield per plant (18.23 g) was recorded in September planting followed by October planting (16.74 g).

26 Closer spacing (30x30 cm) produced higher seed yield per plant (18.18 g) followed by 30 x 45 cm (16.25 g).

27 Seed yield per plant was maximum (18.95 g) when second
pinching was practiced 60 days after planting.

28 Significant interaction due to pinching x time of planting, pinching x spacing were observed for seed yield per plant.

29 Maximum seed yield per plot (284.89 g) was recorded in September planting followed by November planting (251.74 g). The closer spacing 30x30 cm has given highest seed yield (280.12 g).

30 Pinching 60 days after planting was found beneficial and given (287.57 g) seed per plot followed by first pinching 30 days after planting (252.34 g).

31 Significant interaction between pinching and time of planting for seed yield per plot was recorded.

32 1000 seed weight was recorded maximum in September planting (2.43 g).

33 Wider spacing (30x60 cm) gave higher 1000 seed weight (2.30 g) in comparison of medium and closer spacing.

34 No pinching (control) was registered best for 1000 seed weight (2.38 g).

35 Interaction effect of time of planting x spacing, pinching x time of planting, pinching x spacing, and time of planting x spacing x pinching were non-significant for 1000 seed weight.

36 November and October planting were registered significantly superior for germination percentage (91.51 % and 91.57 %) respectively over November planting (74.93 %).
Wider spacing (30x60 cm) gave higher germination percentage (87.49%) than the medium and closer spacing.

Germination percentage was higher in control than the pinching treatments.

Interactions due to time of planting x spacing, pinching x time of planting, pinching x spacing and time of planting x spacing x pinching were non-significant for germination percentage.

The maximum root length (3.68 cm) was recorded in September planting.

The closer plant spacing (30x30 cm) was recorded for higher root length (3.62 cm).

Significantly higher (3.75 cm) root length was in control followed by first pinching 30 days after planting (3.47 cm).

The significant interaction due to time of planting x spacing for root length was observed.

Higher shoot length (4.33 cm) was recorded in September planting followed by November planting (3.93 cm).

Shoot length was the highest (4.30 cm) in closer spacing (30x30 cm) followed by 30x45 cm (4.00 cm).

Higher shoot length was noted in control (4.33) than the pinching.

Interactions due to time of planting x spacing, pinching x time of planting, pinching x spacing and time of planting x spacing x pinching were significant for shoot length.
Seedling dry weight was maximum (0.123 mg) in October planting.

Wider spacing (30x60 cm) had given higher seedling dry weight (0.114 mg) followed by medium spacing (0.086 mg).

The maximum seedling dry weight (0.123 mg) was recorded in control followed by single pinching 30 days after planting (0.106 mg).

Interactions due to time of planting x spacing, pinching x time of planting, pinching x spacing and time of planting x spacing x pinching were recorded significant for seedling dry weight.

Seed vigour index I was maximum (681.55) in November planting followed by October planting (672.14).

Closer spacing (30x30 cm) had given higher seed vigour index I (700.16).

Seed vigour index I was higher in control (722.69) followed by first pinching 30 days after planting (655.56).

The interactions between time of planting x spacing, pinching x time of planting, pinching x spacing and time of planting x spacing x pinching were observed significant for seed vigour index I.

The seed produced in October planting had given highest seed vigour index II (11.36).

The wider spacing (30x60 cm) was noted for maximum seed vigour index II (9.97) followed by 30x45 cm (7.35).

The maximum seed vigour index II was recorded in control (no
pinching) (11.05).

Interaction between time of planting x spacing, pinching x time of planting, pinching x spacing and time of planting x spacing x pinching were noted significant for seed vigour index II.

**CONCLUSION**

Keeping in view of the finding summarized above, it is recommended that seed crop of marigold cv. Pusa Narangi Gainda should be transplanted on 15th September with the spacing of 30x30 cm and second pinching 60 days after planting should be practiced to obtain higher seed yield (18.23 g per plant and 284.89 g per plot) with better seed quality attributes under Muzaffar Nagar condition of Uttar Pradesh.