

## STUDY ON EFFICIENCY OF ROPE METHOD OF POLLINATION IN WHEAT (*TRITICUM AESTIVUM* L.)

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Fourteen wheat strains were sown in pairs during rabi, 1990-91. Each pair comprised of two parental strains of a cross of the same flowering duration. Each strain was sown in a single row of 2 m length with the distance between rows 25 cm. Isolation distance of 2 m was kept between two pairs of parental strains. The standard agronomical practices for irrigated, normal sown conditions were followed. The female lines were emasculated by hand. Each female line consisted of only the emasculated ears as all the unemasculated ears were removed before they emerged from the flag leaves. Rope pollination was done two days after the emasculation. A rope was passed between the male and female lines from one end to the other end of the rows and was moved left and right several times, holding the rope at its both ends. This activity jerked the male line which resulted in shedding of pollen grains. Pollination was done early in the morning for four consecutive days. The number of ears pollinated for each cross combination varied from four to ten. Each spikelet of the emasculated ear had only two florets.

Seed setting in different cross, pollinated by the rope method, is given in Table 1. The highest seed setting (76.6%) was observed in the cross CPAN 3081 x CPAN 3082. The cross

Table 1. Seed setting in different crosses in wheat

| Cross                 | No. of ears pollinated | No. of florets pollinated | No. of seed set | Seed set (%) |
|-----------------------|------------------------|---------------------------|-----------------|--------------|
| CPAN 3056 x CPAN 3050 | 9                      | 208                       | 129             | 62.0         |
| CPAN 3006 x CPAN 3030 | 4                      | 84                        | 18              | 21.4         |
| CPAN 3081 x CPAN 3082 | 8                      | 244                       | 187             | 76.6         |
| HI 1077 x HI 977      | 10                     | 226                       | 122             | 54.0         |
| CPAN 1796 x CPAN 1676 | 6                      | 125                       | 59              | 47.2         |
| Raj 2535 x Raj 3077   | 8                      | 166                       | 90              | 54.2         |
| VW 120 x J 405        | 10                     | 289                       | 89              | 30.8         |
| General mean          | —                      | —                         | —               | 49.5         |

CPAN 3006 x CPAN 3030 showed the lowest seed set (21.4%). Seed set in the four crosses, CPAN 3081 x CPAN 3082 (76.6%), CPAN 3056 x CPAN 3050 (62.0%), Raj 2535 x Raj 3077 (54.2%) and HI 1077 x HI 977 (54.0%) was higher than the general mean (49.5%). In the cross CPAN 3081 x CPAN 3082, which gave the highest percentage of seed set (76.6%), the male parent CPAN 3082 was tall (83 cm) and the female parent CPAN 3081 was dwarf. However, in another cross, CPAN 3056 x CPAN 3050, also showing high percentage of seed set (62.0%), the male line CPAN 3050 was dwarf (78 cm) and the female line CPAN 3056 was tall (89 cm). This means that plant height of the parental lines in a cross does not influence the efficiency of pollination by the rope method. However, higher percentage of seed set in the former cross seems to be due to the high pollen production capacity of the tall male parent. Beri and Anand [1] reported high pollen production capacity of the tall varieties as compared to the dwarf ones. The varietal differences for the number of anthers, rising above the flower, may also influence seed set in different cross combinations. Ageev and Udalov [2] observed close correlation between this character and cross pollination.

No difference was observed in plant height of the male and female parents in the remaining crosses.

The study indicates that the rope method of pollination may be useful as an efficient way to hybrid seed production in wheat. It is, however, suggested that similar studies may be undertaken at different locations to confirm the efficiency of this method before it is used in the hybrid seed production programme on commercial scale.

#### REFERENCES

1. S. M. Beri and S. C. Anand. 1971. Factors affecting pollen shedding capacity in wheat. *Euphytica*, 20: 327-332.
2. A. N. Ageev and V. V. Udalov. 1972. A method of determining the pollen productivity of varieties. *Selektiv. Semenovod.*, 37: 74.

**Table 2. Plant height of strains used in different cross combinations**

| Strains            | Plant height (cm) |
|--------------------|-------------------|
| CPAN 3056          | 89                |
| CPAN 3050          | 78                |
| CPAN 3006          | 81                |
| CPAN 3030          | 85                |
| CPAN 3081          | 67                |
| CPAN 3082          | 83                |
| HI 1077            | 72                |
| HI 977             | 78                |
| CPAN 1796          | 87                |
| Rohini (CPAN 1676) | 90                |
| Raj 2535           | 80                |
| Raj 3077           | 83                |
| VW 120             | 97                |
| J 405              | 94                |