

## Effect of irradiation on wheat (*Triticum aestivum* L.) germination

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The present investigation entitled studies on the effect of irradiation on the wheat germination was carried out with an objective to introduced genetic variability in wheat crop. Therefore, wheat seed of local wild variety viz., khairi from hilly areas of Madhya Pradesh were irradiated with five doses of gamma irradiation (10, 20, 30, 40, 50 Kr) at Bhabha Agriculture Research center, Trombay and their M1 generation was accessed during rabi 2004-05 at Hanumantgaon, Taluka- Rahata on farmers field. The marked effect of irradiation on seed germination was counted on 15 days after sowing. It was noticed that the seed germination was drastically reduced in highest dose of the irradiation, while decrease in dose, there was a corresponding increase in seed germination. In M1 generation, wheat germination resulted in 84.06 per cent with 10 Kr irradiation. The gamma irradiation produced mutation in this local wheat variety showing differential morphological characters. The wheat seed germination observed in untreated

Controlled was 94.10 per cent while it was 42.20 per cent in 50 Kr irradiation. Thus the findings of this research show that the higher dose of radiation decreases the wheat seed germination while mutation rate gets increased (Singh *et al.*, 1977 and Blixit, 1972).

Wheat (*Triticum aestivum* L.) is one of the most important cereal crops of Gramineae family and of the genus *Triticum*. The present investigation is undertaken with a dual objective of understanding the mechanism of action of gamma radiation and to produce Genetic variability in the wheat plant in order to obtain better genotype with better yields character than the present one.

Healthy and uniform seed of wheat (*Triticum aestivum* L.) of wild variety were presoak in tap water for 12 hours and subjected to the treatment with 10, 20, 30, 40 and 50 Kr. of gamma radiation for 5 minutes (Zee

rack, 1991). These treatments were given at Bhabha Atomic Research Centre, Mumbai. The irradiated seed were sown during rabi 2004.

### The experimental details are

- No of treatment = 6 *i.e.* seed irradiated with 10, 20, 30, 40, 50 Kr and control
- No of replication : 4
- Design : RBD
- No of seeds sown : 600 / treatment

In present investigation the efforts were made to induce the genetic variability in wheat (*viz.*, khairi) through a gamma radiation. The basic objectives of present investigation were to screen the irradiated population for seed germination.

The data of Table 1 revealed that seed germination was significantly reduced with increase in dose of gamma radiation. Highest seed germination observed in control (94.10%) followed by 10Kr. irradiation (84.06%) while lowest seed germination was (42.20%) was observed with

**Table 1 : Effect of gamma irradiation on seed germination**

Treatment (Kr. gamma)	Seed germination (%)
0	94.10
10	84.06
20	73.88
30	62.77
40	53.67
50	42.20

50Kr. irradiation.

Even though initially seed germination of irradiated population was at satisfactory (49.58 – 73.09%) level. Therefore very high seedling mortality was noticed (46.78 – 92.84%). The seedling mortality significantly increased in irradiation dose from 10 to 50 Kr.

In present study due to the irradiation treatment noticeable adverse effect was observed on wheat seed germination. Even though upon initial seed germination of 84.06 to 42.20 % from 10 to 50 Kr. irradiation, respectively. Thus increased dose of irradiation (*i.e.*, 20 to 50 Kr.) proved lethal for wheat crop. The 10 Kr. Dose should be consider as LD 50 dose for wheat.

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