MATERIALS
AND
METHODS
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For study the differential response of different concentration of mercuric chloride, barley and wheat were taken as test plant. The following points were observed on taking test plants.

1. Effect of various concentration (5, 30, 60, 100, 200 mg/lit.) of mercury on seed germination.

2. Seedling growth under the influence of various concentration of mercury.

3. Effect of phasic pretreatment of mercury on seedling growth.

4. Seedling growth under the influence of various concentration of mercury amended soil.

5. Effect of mercury on rate of dry matter accumulation and biological yield.

For the above points the detailed studies were carried out Triticum aestivum cv. PBW-343 and Hordium vulgare cv. foundation.

For the studies seeds were procured from G.B. Pant Agricultural University, Pantagar. For the experiment, as for as possible uniform seeds were selected on the basis of size, shape
and colour. The selected seeds were fully developed and mature.

**Method For Pre-Treatment:**

For the pretreatment, selected seeds were sterilized with 0.1% solution of mercuric chloride and after washing with distilled water, the seeds were imbibed in different concentrations of mercuric chloride, separately for their specific imbibition period. The seeds were washed with distilled water and transferred to distilled water moistened filter papers petriplates at room temperature. After 24 hours of plating the germination percentage of wheat and barley was reported, while the seedling growth and fresh weight studies were done after 3rd, 5th, 7th, 9th day of radicle emergence.

**Method For Post Treatment:**

Firstly seeds were imbibed in distilled water for their full imbibition period. When the radicle was seen the seeds were transferred to distilled water, 5mg/lit, 30 mg. Lit, 60mg/lit, 100 mg/lit 200 mg/lit, concentrations petriplates.

After 24 hours of plating germination percentage was recorded. After 3rd, 5th, 7th & 9th day of seedlings shoot and root growth and fresh weight were observed.
Method For Seedling Growth Under The Influence Of Various Concentrations Of Mercury In Amended Soil:

For studies the growth of wheat and barley in different concentrations soil. Firstly sandy loam with neutral pH, moderately rich organic matter soil was taken from T.D. college agriculture farm (Peli Kothi). The soil was amended with mercuric chloride. The concentrations used in soil were 25 mg in 5 kg., 150 mg. in 5 kg., 300 mg. in 5 kg., 500 mg. in 5 kg. and 1000 Mg. in 5 kg. Amended soil was kept in 33 X 33 Cm. blocks. Each block contained 5 Kg. Soil. For comparsion, non-amended soil was also taken in one in each block. Control and treated sets were irrigated at proper interval by tap water.

Growth studies were done after 50 days of sowing and yield analysis was done after 110 day of sowing.

Method Of Phasic Pretreatment Mercury:

The imbibition’s period of both test plant is 12 hours. So the whole imbibition’s period was divided into six equal phases of two hours each. A high concentration of mercuric chloride 100 mg/lit. was selected for treatment.

For control set seeds were soaked in distilled water for their full imbibition’s period. While in the treated set I (Regime -1) seeds were imbibed in mercuric chloride solution
during the first phase i.e. 0-2 hours, followed by imbibition in distilled water for remaining period i.e. 2-12 hours. In the second set (Regime -2) seeds were imbibed in HgCl₂ solution during second phase i.e. 2-4 hours. In the preceding and following periods in distilled water i.e. 0-2 hours and 4-12 hours.

In the set III (Regime -3) seeds were soaked in HgCl₂ solution during the third phase i.e. between 4-6 hours while for the rest of the phase i.e. 0-4 and 6-12 hours in distilled water. In set IV (Regime -4) seeds were soaked in mercuric chloride solution during the fourth phase i.e. between 6-8 hours and the rest of the phase i.e. 0-6 and 8-12 hours in distilled water.

In the set V (Regime -5) mercuric chloride treatment was done during the fifth phase i.e. 8-10 hours while the during the rest of the phase in water i.e. 0-8 and 10-12 hours. Similarly in the set VI (Regime -6) mercuric chloride treatment was given during sixth phase i.e. 10-12 hours, which was proceeded by imbibition of seeds in distilled water i.e. 0-10 hours.