EFFECT OF LEAD ON SEED GERMINATION

Chapter-3

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To assess the impact of different concentrations of lead acetate on seed germination of rainy season crop plants i.e. Oryza sativa, Zeamays and Phaseolus mungo T-9 cvs. were selected for the seed germination studies. Prior to lead acetate treatment seeds of the test plants were selected for uniformity criteria being size, shape and colour and sterilized with 0.01% mercuric chlorde and thoroughly washed with distilled water.

The sterlized seeds were imbibed in various concentrations of lead acetate solutions for their spaciffic imbibition periods. For control sets seeds were imbibied in distlled water for their spaciffic imbibition period. The treated seeds were washed with water and transfred to distilled water moistened filter paper in petri dishes for germination. Seecs were allowed to germinate and temperature in Laboratory Condition. The seeds with 1.5mm length of radicle were considerd as germinated seeds.

Seleceted cultivars for seed germination studies were Oryza sativa cv. Sarju-52, Zea mays cv. Jaunpuri Phaseolus mungo cv. T-9.

Selected concentrations of lead acetete used for the study of seed germination were 10mg/l, 20mg/l, 30mg/l and 50mg/l.

The maximum inhibition in seed germination was in highest concentration of lead acetate i.e. 50mg/l, treated seeds where as it was minimum in lower most concentration 10mg/l lead solution. In rest of the concentrations (20mg/l and 30mg/l lead acetate solution) inhibition was in between.

The inhibition in seed germination in 10 mg/l 20mg/l 30mg/l and 50mg/l. Lead concentrations was Ca 4%, 6% 10%, 20% respectively in Oryza sativa cv. Saraju-52 and Saket Ca. 2%, 6%, 8% and 22% respectively in Zea mays cv. Jaunpuri. In Phaseolus mungo cv. T-9; 3%, 6% 10% and 18% respectively. (Fig. 2).

For the study of effect of phasic treatment of lead aceteate on germination of seed the whole imbibition period was divided into six equal phases each phase for all the cultivars of the test plant was of 2 hours (having the imbibition period of 12 hours). The treatments of lead acetate were given to the seeds of test plant in these phases seprately, while in the rest of the phases the seeds were kept in distilled water. The lead acetate concentrations used for the phasic treatment were 10mg/l, and 50mg/l. It was reported that their was no signigicant effect on seed germination in 10mg/l. Lead acetate treated seeds however, 50 mg/l Lead acetate concentration was inhibitory to seed germination in all the cultivars studied. The most intresting result observed was that there was maximum inhibition in

germination of seeds was in mid phase)regime - 4). Minimum inhibition in seed germination was recorded in the initial phase (regime -1), while in rest of the phase the inhibition in seed germination was between the initial phase and the mid phase. Thus inhibition in seed germination in regimes - 1,2,3,4,5, and 6 was Ca, 8%, 10%, 12%, 18%, 14% and 10% respectively in Oryza sativa cv. Sarju-52 and Saket Ca, 8%, 9%, 11%, 16%,12%, and 7% respectively, in Zea mays cv. Jaunpuri; Ca, 9%, 11%, 13%, 19%, 12%, and 8% respectively. In Phaseolus mungo cv. T-9

SUMMARY OF THE OBSERVATIONS

1. All the concentration of Lead acetate used were inhibitory to seed germination.

2. There was maximum inhibition in seed germination in the highest concentration of lead acetate.

3. In lead acetate phasic pretreatement studies there was maximum inhibition in seed germination in mid phase (regime-4) terated set.

4. There was minimum inhibition in seed germination in initial phase treated set.

5. In rest of the regime inhibition in seed germination was in between the initial and mid phase.