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Effect of Hot Water Treatment on Germination of *Crotalaria spectabilis* seeds in vitro.

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Crotalaria spectabilis, a wild leguminous plant, is reported to be immune to root-knot nematode (*Meloidogyne* spp) (2). It helps in reducing the root-knot disease by way of trapping the nematodes in the roots and not allowing them to reach maturity for further reproduction (1). An attempt was made to use this character of *C. spectabilis* for control of root-knot disease in field. The seeds did not germinate satisfactorily. Scarification also did not lend much help to improve germination. It was, therefore, thought to try out hot water treatment. In a preliminary trial, *C. spectabilis* seeds were treated with hot water at 100°C for varying exposure times upto 35 seconds. Maximum seed germination was observed with the exposure time of 20 seconds. The present study was undertaken to find out whether the temperature of water and the exposure time can be reduced without affecting the germination. For this purpose, 25 gm. seeds were soaked in 125 c.c. water with temperature of 50, 75 and 100° C for 5, 10, 15 and 20 seconds. After the exposure time, the pan was removed from the fire and the seeds were kept soaked for 24 hours in the same hot water which was allowed to cool naturally. One hundred seeds were then placed in petriplates for germination test at room temperature (32.5°C). Four plates were maintained for each treatment. Per-cent seed germination was recorded in each case after 48 hours. The results obtained (Table 1). Indicated that seed germination increased significantly with increase in water temperature and it was maximum at 100°C (boiling point). Similarly, germination increased with increase in soaking time duration in hot water and was maximum in case of 20 seconds exposure time (Figure 1). The interaction effect between temperature and time duration was also significant and 100°C for 20 seconds proved to be the best treatment for procuring maximum germination of seeds (93.5%), however, the differences between 5, 10, 15 and 20 seconds at 100°C were not significant indicating that any one of the time duration is as good.

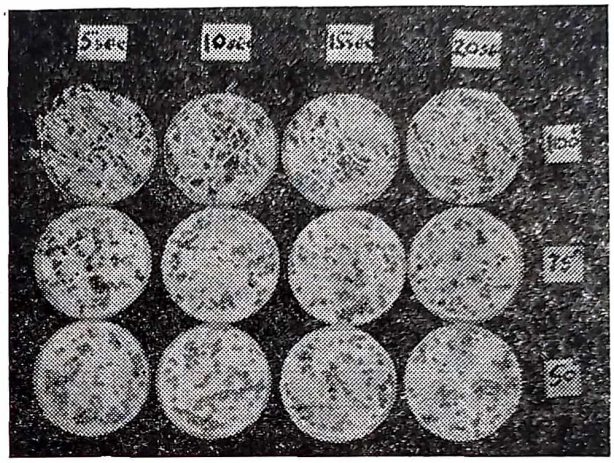

Fig. 1 : Germination of *C. Spectabilis* at various temperature exposures.

TABLE 1

Per cent germination of *C.spectabillis* seeds at different temperatures and at varying exposure time.

Temperature in 0.C(T)	*Time duration in seconds(I)*				
	5	**10**	**15**	**20**	*Mean*
50	4.50*	2.00	2.50	3.25	3.06
75	15.00	14.75	22.25	25.00	19.25
100	88.25	91.75	89.00	93.50	90.63
mean	35.92	36.17	37.92	40.58	

	Temperature (T)	Time duration (I)	TxI
S.Em.	0.92	1.13	1.84
C.D. at 5%	2.65	3.25	5.30
C.V.%	———	9.8	———

* Mean of four replicates.

It was then thought to determine whether the soaking time of 24 hours after 20 seconds exposure at 100°C can be reduced without affecting the germination. The seeds were treated at 100°C for 20 seconds and were allowed to remain soaked for 1, 2, 3, 4, 5, 6, 12 and 24 hours in the same water. The quantity of seeds used for each treatment was 25 g. One hundred seeds were then placed in the petriplates for germination test. Per cent germination was worked out. The results summarized in Table 2 indicated that the seed germination was improved with increase in soaking time and it was maximum when seeds were soaked for 24 hours after hot water treatment. Thus, it can be concluded that hot water treatment at 100°C for 5 to 20 seconds and then retaining the seeds in that water for atleast 24 hours is needed for better germination of *Crotalaria spectabilis* seeds.

TABLE 2

Per cent germination of *C. spectabilis* seeds at different soaking time.

Soaking time in hours	*Per cent seed germination*
1	72.00
2	75.75
3	78.75
4	82.75
5	84.25
6	82.75
12	84.00
24	91.25
S.Em.	1.21
C.D. at 5%	3.59
C.V.%	3.00

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