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Hydropriming Tempted Improvement in Seed Germination Percentage of *Solanum Nigrum* L.

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Abstract

Solanum nigrum L. is an ancient medicinal plant useful in many ways to humans as well as animals. It belongs to family Solanaceae and commonly called as black night shade. Efforts are made to improve its rate of germination as the plant is temperature dependent. Study was conducted to study effect of hydropriming on seed germination in Solanum nigrum. It was revealed that the time of priming in distilled water increased germination percentage and it decreased gradually at higher period.

Keywords: *Solanum nigrum L*, soaking, hydropriming, germination, productivity

1. Introduction

Solanum nigrum L. of Family Solanaceae commonly called Black night shade is one of the largest and most variable species groups of the genus [3]. Plant is used in various disorders like rheumatic fever and gouty joints, skin diseases, as anti-tuberculosis agent. Leaves are also used in dropsy, nausea and nervous disorders. Decoction of the berries and flowers are useful in cough, erysipelas. The plant is also effective in curing cardiopathy, leprosy, haemorrhoids, nephropathy, ophthalmopathy, dropsy and general debility [7]. Optimal temperature for germination of seeds ranges from 20 to 38^{o}C at lower dormancy [1]. Hydropriming may help in seed imbibition at lower temperature and high dormancy.

Seed priming is the process of controlled hydration of seeds to enhance metabolic activity of seed but prevents growth of the

radicle. The process is used in research related to seed germination as it enhances the germination percentage, promotes uniformity of germination, imparts the resistance towards water and temperature stress, Increases the shelf life of seed, and is highly suitable for small seeds with low germination capacity.

2. METHODOLOGY

Research was conducted in department of Botany ACS, College, Narayangaon. Seed material was collected from wild in the form of mature fruits which were dried to separate seeds. Seeds were sun dried and stored. For hydropriming seeds were presoaked to imbibe water and go through the first stage of germination avoiding radicle emergence for different period. After water imbibition, seeds were dried to their original weight. Further primary germination studies were carried out as follows.

Germination percentage: emerging seeds were counted, and germination was calculated in percentage using the following formula:

$$\% \text{ Germination} = \frac{\text{Mean number of seeds germinated}}{\text{Total number of seeds sown}} \times 100$$

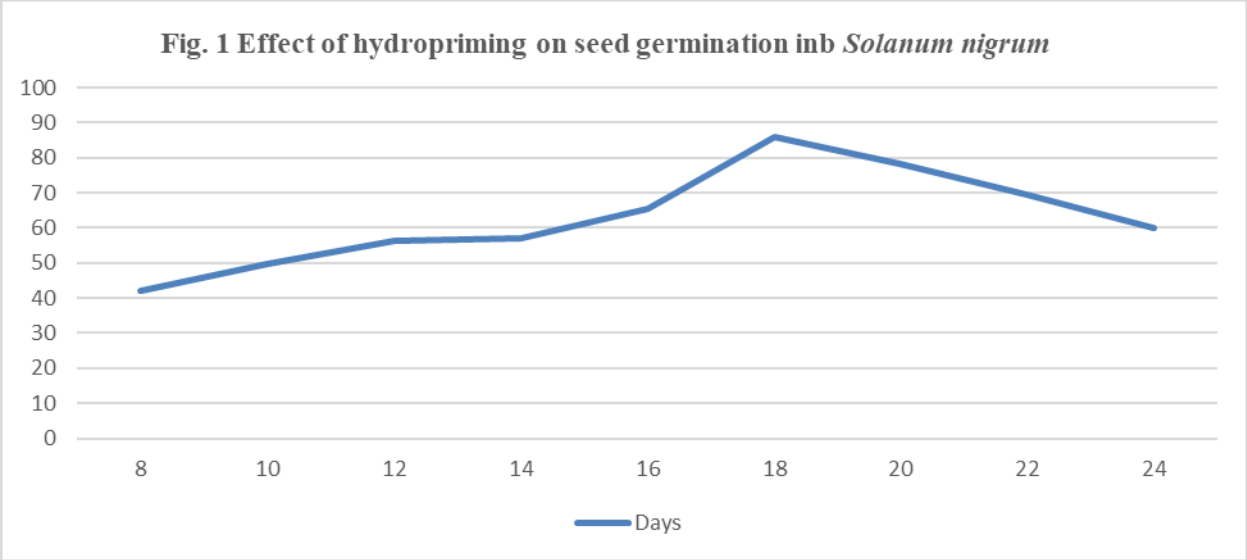
3. RESULTS AND DISCUSSION

Non primed seeds were treated as control which showed least germination percentage. As the time of priming in distilled water was increased there was increase in germination percentage and it decreased gradually at higher period that is 24 hrs. The optimal period for soaking seeds to obtain higher rate of germination was observed at 18 hrs. In research conducted it was noted that soaking of seeds in water for 18 hours followed by 2 hours surface drying could be used as priming method for maize seeds [4].

Priming results are observed immediately after sowing which produce large, heavier seedlings with large leaf areas as stated by [5]. Due to hydropriming seeds imbibe pre sowing and fastens the process of embryo metabolism leading to early germination at higher rate. Similar observation was made by [6]. Hydropriming along with biopriming may show varied results. In study conducted by [8] it was found that the use of hydropriming and biopriming improved germination rate for several plant species under greenhouse condition [2]. reported this technique to be most useful to the farmers facing drought and weed competence.

Table 1: Effect of hydropriming on seed germination percentage at different time intervals (8 to 24 hrs.) at 25 °C in *Solanum nigrum* L.

Period (Hours)	No. of seeds germinated			Mean	Germination percentage
	Set I	Set II	Set III		
Control	25.3	25.3	28.3	26.3	32.87
8	33.5	33.9	33.1	33.5	41.87
10	33.9	34	33.8	33.9	49.87
12	45	45.1	44.7	44.93	56.16
14	45.5	45.6	45.4	45.5	56.87
16	52.1	52.5	52.9	52.5	65.62
18	68.3	68.6	69.4	68.76	85.95
20	62.1	62.5	62.9	62.5	78.12
22	55.5	55.6	55.4	55.5	69.37
24	49	47.1	48.1	48.06	60.07



4. CONCLUSION

In conclusion it can be said that technique of hydro and bio priming may be useful for many researchers, students and plant producers like farmers. This technique is and aid to promote germination in dormant seeds and plants with seasonal germination. It may lead to higher germination which will increase crop productivity. Present research was successful in evaluating the optimal time required for hydropriming of *Solanum Nigrum* and increase rate of germination.

Conflict of interest

No conflict of interest influenced in this research.

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