



IMPROVEMENT IN SEED GERMINATION PERCENTAGE AND PRODUCTIVITY OF *CORIANDRUM SATIVUM* L. THROUGH SEED PRIMING

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ABSTRACT:

Coriandrum sativum L. belongs to the family Apiaceae commonly called Coriander. It is a common green spice used in every part of India. In Maharashtra, it is known as Kothembiri. Efforts are made to improve its rate of germination as the plant is temperature dependent. Present study was conducted to study effect of hydropriming on seed germination in *Coriandrum sativum* L. Hydropriming have resulted improvement in seed germination as well as it may help in reducing days to germinate and increase productivity by days with respect to non-primed seeds.

Keywords: *Coriandrum sativum* L, hydropriming, germination, productivity.

INTRODUCTION:

Coriandrum sativum Linn. belongs to family Apiaceae. It is native to southern Europe and North Africa to south-western Asia, this aromatic beautiful herb is found in many parts of the world commonly known as coriander. It is also known as Chinese parsley or, particularly in the Americas, cilantro (Verma *et al.*, 2011). It is native to the Mediterranean region Jamali (2012). It has great economic and nutritional value in Indian agriculture and well-known medicine in traditional medicinal system like Ayurveda (Salve K. M. and More A. D., 2019). It is an annual soft, hairless herb growing up to 25 to 35 cm. in height. The leaves are variable in shape, broadly lobed at the base and slender and feathery top on the flowering stems. The flowers are borne in small umbels, white or very pale pink in colour, with the petals pointing away from the centre of the umbel longer 5–6 mm. The fruit is a globular dry schizocarp 3–5 mm. in diameter. Fruit has delicate fragrance; seeds are pale white to light

brown in colour Wallis (1985) and (Verma *et al.*, 2011). Optimal temperature for germination of seeds ranges from 20 to 38°C at lower dormancy (Andersson, L. 2008). 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.

MATERIAL AND METHODS:

Research was conducted in department of Botany Pemraj Sarda College, Ahmednagar. Mature seed material was collected, 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:
% Germination =

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

RESULT AND DISCUSSION:

Control showed least 32.9 germination percentage. As the time of priming in distilled water was increased there was gradual increase in germination percentage and it decreased at higher period that is 24 hrs. The optimal period for soaking seeds to obtain higher rate of germination was observed at 18 hrs. 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 (Ahammad K.U. et al, 2014).

Priming results are observed immediately after sowing which produce large, heavier seedlings with large leaf areas as stated by (Nakao, Y et al, 2018). Due to hydropriming seeds imbibe before sowing and fastens the process of embryo metabolism leading to early germination at higher rate. Similar observation was made by (Ramón Zulueta-Rodríguez et al, 2015). Hydropriming along with bioprimering may show varied results. In study conducted by (Venkatasubramanian, A. & Ranganathan, Umarani, 2007) it was found that the use of hydropriming and bioprimering improved germination rate for several plant species under greenhouse condition (Dipika Mal et al, 2019) reported this technique to be most useful to the farmers facing drought and weed competence (Bhosale R. S. and Inamdar V. G., 2020).

CONCLUSION:

It can be said that technique of hydropriming may be useful for many researchers, students and plant producers like farmers. This technique promotes germination in dormant seeds and plants with seasonal germination. It may lead to higher germination as well as reduced days to germinate which will increase crop productivity. Present experiment was successful in studying the optimal time required for hydropriming in seeds of *Coriandrum sativum* L.

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

Period (Hours)	Germination in Percentage			Mean Germination % (\pm SE)
	Set I	Set II	Set III	
Control	30.2	33.2	35.3	32.9 \pm 0.6
8	38.3	38.7	38.1	38.36 \pm 0.07
10	38.9	38.3	40	39.06 \pm 0.2
12	41.1	39.9	38.9	39.96 \pm 0.2
14	45.4	44.9	44.5	44.93 \pm 0.1
16	51.2	52.9	55.6	53.23 \pm 0.5
18	63.5	63.2	64.7	63.8 \pm 0.2
20	55.2	55.6	56.1	55.63 \pm 0.1
22	53.1	52.2	53.5	52.93 \pm 0.1
24	42	45.3	46.2	44.5 \pm 0.5