

Effect Of Storage Containers On Percentage Germination In The Seeds Of Coriandrum Sativum

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Abstract: A study was undertaken on *Coriandrum sativum* to know the effect of storage containers on seed quality and seed germination. Steel container showed the highest germination percentage and seedling vigour which was followed by polythene bag where cloth bag showed the lowest germination percentage and seedling vigour. The germination percentage of seeds decreased gradually with increase in storage periods on the other hand dead seedlings and abnormal seedlings percentage increased gradually with increase in storage periods. After 12 months of storage, among the three containers the steel container showed the highest germination while cloth bag showed the lowest germination percentage. Among the three containers steel container was the best and cloth bag was the worst storage container up to 12 months of storage for *Coriandrum sativum* seeds.

Keywords: Storage containers, storage periods, *Coriandrum sativum*.

I. INTRODUCTION

Coriander is a tropical crop and can be successfully cultivated as a rabi season crop. Coriander can be described as a yearly and perennial herb, belonging to the family Apiaceae having chromosome number $2n=22$. Coriander is most likely a native of the eastern Mediterranean and from there spread to India and China. The Romans are probably responsible for introduction of coriander to northern Europe. The fruits (seeds) are widely used as condiments with or without roasting in the preparation of curry powders, sausages and seasonings.

Though the seed quality depends primarily on its genetic makeup but commonly the quality of seeds is also affected by fungal contamination or insect infestation during storage. Poor storage conditions such as temperature, moisture content, relative humidity, storage containers, storage periods and several biological factors are some storage parameters which affect the quality of stored grains (Jayas and White, 2003).

II. MATERIALS AND METHODS

During the experiment two different parameters, three storage containers (steel container, polythene bag and cloth bag) and four storage periods (3 months, 6 months, 9 months and 12 months) were taken into consideration to study their effect on the germination of *coriandrum sativum* seeds. The seeds were kept at room temperature for up to 12 months. Seed samples were taken randomly from each storage container.

The moisture content was determined by using digital moisture meter following International Rules for Seed Testing (ISTA, 1999).

The germination percentage and prevalence of different fungi were determined by towel paper method. 100 seeds per replication were placed on two moist papers of 23×30 cm size, kept in upright position in an incubator at 30°C.

The germination counts were calculated and taken as percent germination. After a week seedling vigour was recorded by measuring root shoot length with the help of measuring scale.

There were three replications for each treatment. No. of normal seedlings, abnormal seedlings and dead seeds were counted. Germination percentage was determined by the following formula.

$$\text{Germination Per cent} = \frac{\text{Normal seedlings}}{\text{Total no. of seed taken}} \times 100$$

III. RESULT AND DISCUSSION

The effect of different storage containers on the germination of seeds is presented in table 1. Initial germination was similar in all storage containers i.e. 76.67%. The final germination tests were done after 12 months of storage.

The result shows that the germination decreases significantly with the increase in storage time. The highest germination of 72.67% was recorded in steel container after 3 months of storage. The lowest germination (63.33%) was recorded in case of cloth bag. After 6 months of storage the highest germination percentage was 68 in steel container and the lowest was 60.67% in the case of cloth bag. After 12 months of storage the highest germination percentage was recorded in the case of steel container which was 58.67 and the lowest was 44.33 in the case of cloth bag. The germination in plastic bag was intermediate. Thai (1981) found that soybean seeds stored at initial seed moisture content of 10.5% can be stored in sealed tin cans for at least six months both under controlled and uncontrolled conditions and maintain germination above 71%. The moisture content of *Coriandrum sativum* seeds increased from 8.21% to 10.48% after 12 months of storage. Bankole *et al.* (1999) stored melon seeds in jute and polythene bags for 12 months and determined moisture content monthly. The moisture content increased from 6.1 to 6.7% in jute and 6.2 to 6.5% in polythene bags for 12 months in storage. The germination percentage decreased from 96.3% to 28.7% and 45.3% in jute and polythene bags respectively.

It may be concluded that germination percentage and seedling vigour gradually decreased but dead seedling and abnormal seedling percentage gradually increased with increase in storage periods. Among the three storage containers steel container proved to be the best container and cloth bag was the worst container for the storage of coriander seeds for a period of 12 months.

Storage container	Storage Period	Germination Percentage (%)	Abnormal Seedling (%)	Dead Seedling (%)	Seedling Vigour (%)
Steel	Before storage	76.67	12.00	11.33	1260.03
	After 3 months	72.67	16.00	11.33	1122.35
	After 6 months	68.00	18.67	13.33	981.47
	After 9 months	62.67	22.67	14.67	818.97
	After 12 months	58.67	24.00	17.33	735.79
Polythene	Before storage	76.67	12.00	11.33	1260.03
	After 3 months	70.00	17.33	12.67	987.00
	After 6 months	65.33	18.67	16.00	874.77
	After 9 months	56.00	26.67	17.33	623.47
	After 12 months	50.67	31.33	18.00	559.46
Cloth	Before storage	76.67	12.00	11.33	1260.03
	After 3 months	63.33	16.67	20.00	794.37
	After 6 months	60.67	24.00	15.33	708.71
	After 9 months	48.67	37.33	14.00	510.28
	After 12 months	44.33	30.67	24.67	445.71

Table 1: Effect of different storage containers on the germination of *Coriandrum sativum* seeds at different periods of storage

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