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Effect of Drying Methods on Seed Quality of Byadagi Chilli

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ABSTRACT
The pooled results of the two year experimentation revealed that, among the different methods of drying chilli, significantly highest per cent (85%) of germination was noticed with treatment (T6) drying on surface washed with dung slurry and field emergence(77%) with drying on cement concrete floor and drying on polythene tarpaulin sheet. The high temperature during drying period will affect the seed quality parameters.
Key words : *Drying methods, Seed quality, Chilli Seed, Bydagi Chilli*

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INTRODUCTION

Drying is one of the essential unit operations performed to increase the shelf life of agricultural / horticultural produce and it is one of the most practical methods of preserving food and the quality of horticultural produce. If the drying process is not completed fast enough, growth of microorganisms will take place as a result of the high relative humidity [1-2]. This often leads to severe deterioration of the quality of the product. Traditionally, the food products are dried by spreading in thin layer in open sun. Though this method is economical and simple, it has the draw backs like - no control over the rate of drying, non-uniform drying, chances of deterioration due to exposure of products against rain, dust, storm, birds, rodents, insects and pests resulting in poor quality of dried products. The most popular cultivar of chilli known as Byadagi chilli it is known for its colour, taste and quality [3]. Dry chilli is exported to other countries due to increased demand. The chilli is harvested during red ripe stage and then it is dried normally under the sun till the moisture in dry fruits attains to 8 to 10 % which necessary to store the fruits. Whereas, solar drying system leads to faster rate of drying and exposure of products against rain, dust, storm, birds, rodents, insects and pests are avoided. This ensures better quality of dried products which would fetch higher prices. Mangaraj *et al* [5] dried punched and unpunched *Jwala* variety of chillies in a solar cabinet dryer and reported that it took 36 hours and 54 hours, respectively to dry the punched and unpunched chillies from 300 (d.b.) to 8- 9% (d.b.). Seeds were also extracted from the these dried fruits and used for the next season by the farmers in Karnataka. The quality of the seed also depends on the method of drying. If the method followed is not proper then it will affect the seed quality.

MATERIALS AND METHODS

The experiment was conducted to study the different methods of drying used for dying of chilli during 2015-16 to 2016-17 in rabi season at Horticultural Research and Extension Station, Devihosur, Haveri, Kranataka, which is located at latitude of 14.470N, longitude of 75.20E and with an altitude of 563.0 m above mean sea level (MSL). The freshly harvested red ripe chilli fruits of variety 'Byadagi Dabbi' was used. The normal uniform sample size of 20 kg for each treatment was used. The eight different methods of dying (treatments) were studied with a statistical randomized complete block design with three replications. The initial moisture level of the fruits were tested and used for the treatments. The treatment details are as follows : T1 - Drying in solar tunnel drier, T2 - Drying on cement concrete floor, T3 - Drying on polythene tarpaulin sheet, T4 - Oven drying, T5 - Drying on metal wire mesh, T6 - Drying

on surface washed with dung slurry (farmers practice), T7 - Drying on surface of zinc sheets, T8 - Drying on bare soil surface (farmers practice).

RESULTS AND DISCUSSION

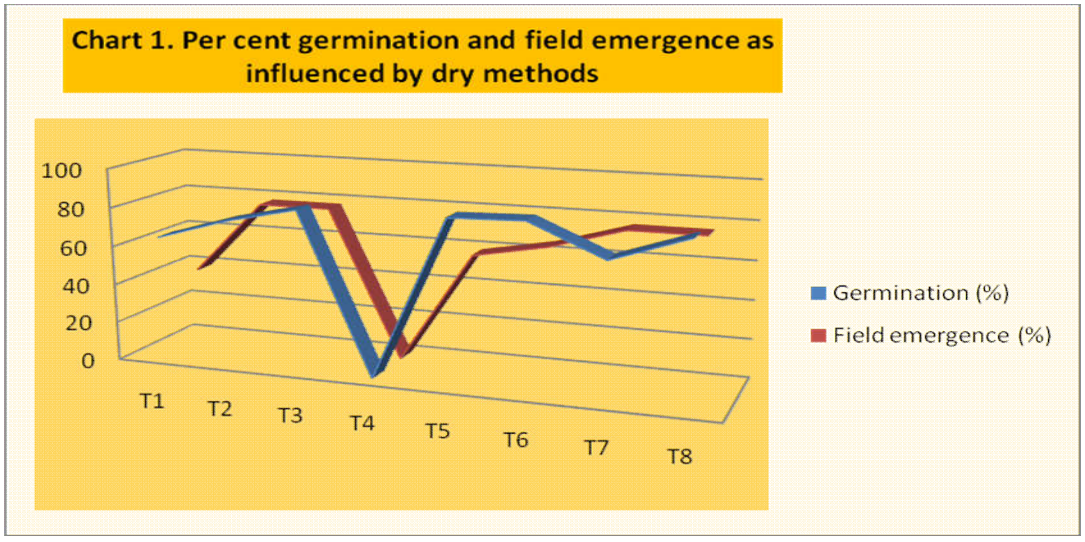
The pooled results of the two year experimentation (Table 1.) revealed that, the different methods of drying have the significant influence on seed quality of chilli. Significantly highest per cent (85%) of germination (chart 1) was noticed with treatment (T6) drying on surface washed with dung slurry however; it is found on far with the treatments T1, T2, T3, T5, T7 and T8. The significantly lowest or no result of germination was noticed with T4 i.e. in oven drying method. The germination was mainly governed by the weather parameter temperature. In oven drying and solar dying methods it is found to be nil and numerically less respectively. The main reason is high temperature at oven around 57^0 C and in solar tunnel dryer it was around 53 to 57 ^{0} C. In solar tunnel dryer the temperature depends on the outside air temperature. The similar results were also noticed by Kurubetta *et al.,* [4].

Significantly highest seedling vigor index (814) was found in treatment (T5) drying on metal wire mesh however it is at par with the treatments T6 and T8. The lowest seedling vigor index was noticed with the treatment drying in solar tunnel dryer and oven drying methods.

The per cent field emergence (chart 1) was also differed significantly for the different drying methods. Significantly highest field emergence was noticed with treatments T2 and T3; however it is on par with the treatments T5, T6, T7 and T8. The lowest per cent field emergence was noticed with the treatments drying in solar tunnel dryer and oven drying methods.

Table 1. Effect of Drying Methods on Seed Quality of Chilli (Pooled)

Treatments	Germination (%)	Root length (cm)	Shoot length (cm)	Total seedling length (cm)	Seedling Vigor Index	Field Emergence (%)
T1 - Drying in solar tunnel drier	64	2.5	4.6	7.0	441	39
T2 - Drying on cement concrete floor	75	3.1	4.3	7.3	545	77
T3 - Drying on polythene tarpaulin sheet	83	3.4	5.1	8.4	697	77
T4 - Oven drying	0	0.0	0.0	0.0	0	0
T5 - Drying on metal wire mesh	84	4.0	5.8	9.7	814	58
T6 - Drying on surface washed with dung slurry	85	3.5	5.3	8.7	734	65
T7 - Drying on surface of zinc sheets	69	3.7	5.3	8.9	612	76
T8 - Drying on bare soil surface	82	4.1	5.4	9.4	769	76
S.Em ±	6.25	0.56	0.55	0.45	32.78	6.14
C. D @ 5%	18.0	1.6	1.6	1.4	98.0	20.0
C. V (%)	17.0	16.0	8.0	11.0	12.0	13.2



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