EFFECT OF DRYDRESSING TREATMENTS AND CONTAINERS ON SEED QUALITY PARAMETERS IN LABLAB (*LABLAB PURPUREOUS* L.) UNDER NATURAL AGEING CONDITIONS

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ABSTRACT
Dry dressing of freshly harvested lablab seeds with thiram @ 2 g kg⁻¹, activated clay @ 1:100 (clay: seed ratio) and halogens @ 3 g kg⁻¹ revealed that the seeds dry dressed with thiram @ 2 g kg⁻¹ and stored in 700 gauge polythene bag maintained the maximum germination (80%), dry matter production (134 mg seedling⁻¹), protein content (24.24%) and minimum leakage of electrical conductivity (0.940 dSm⁻¹) and bruchid infestation (9.58%) up to one year under natural ageing conditions over control. In all the treatments, the deterioration of seed quality parameters was less in polythene bag compared to cloth bag.

INTRODUCTION
Physiological deterioration of seeds during storage is considered to be one of the major factors preventing seeds from normal germination and vigorous growth. High atmospheric humidity coupled with high temperature during seed storage period greatly hastens seed ageing. The deterioration is also aided by adverse storage environment, seed moisture content and containers used for storage (Justice and Bass, 1978). Dry dressing of seeds with halogenated compounds such as bleaching powder and iodinated calcium carbonate has maintained post storage germinability of several freshly harvested non-leguminous and leguminous crops (Mandal and Basu, 1986). In lablab, the major problem in storage is infestation by brochids. Hence, evolving an improved storage strategy to prolong the self life for one or two seasons under ambient storage conditions with an easy and inexpensive method would greatly help the pulse growing farming community.

MATERIAL AND METHODS
Genetically pure seeds of lablab cv. CO1 obtained from Department of Olericulture, Horticultural College and Research Institute, Coimbatore formed the basic material. The graded (22/64" sieve) bulk seeds were dried to a uniform moisture content of eight percent. Three dry dressing treatments were imposed viz., thiram @ 2 g kg⁻¹ (T₂), activated clay @ 1:100 (clay: seed ratio) (T₃) and halogens @ 3 g kg⁻¹ (T₄). The treated seeds along with control (T₁) were stored in loosely bound cloth bag (C₁) and polythene bag (C₂) (700 gauge) for 12 months under ambient conditions (mean temperature 27.8 ± 4°C, RH 72 ± 3%). Seed samples were drawn at an interval of three months and analyzed for moisture content (%), germination (%), dry matter production (mg seedling⁻¹), electrical conductivity (dSm⁻¹), protein content (%) and bruchid infestations (%).

The moisture content was analyzed by low constant oven method using four replicates each of five gram coarsely ground seed material at 105°C for 16 h (ISTA, 1999). Germination test was conducted in sand medium using four replications 100 seeds each in germination room maintained the temperature of 25 ± 2°C and RH of 95 ± 2%. The final count was taken on 10th day and expressed as percentage (ISTA, 1999) and for assessing dry matter production, the normal seedlings were dried in a hot air oven at 80°C for 24 h. The electrical conductivity was measured by soaking 25 seeds in 50 ml of demineralized water for 16 h with a digital conductivity meter and expressed in dSm⁻¹.
**TABLE 1:** Influence of dry dressing treatments and storage containers on protein (%) and bruchid infestation in *Lablab purpureus* L. cv CO 1

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Periods of storage (Months)</th>
<th>0</th>
<th>3</th>
<th>6</th>
<th>9</th>
<th>12</th>
<th>Mean</th>
<th>Bruchid infestation (%)</th>
<th>Mean</th>
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<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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<tr>
<td><strong>T1- Control</strong></td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - Cloth bag</td>
<td>27.15</td>
<td>27.00</td>
<td>26.14</td>
<td>23.50</td>
<td>25.68</td>
<td>0.00</td>
<td>16.71</td>
<td>24.81</td>
</tr>
<tr>
<td></td>
<td>C&lt;sub&gt;2&lt;/sub&gt; - Polythene bag</td>
<td>27.15</td>
<td>27.08</td>
<td>26.38</td>
<td>23.67</td>
<td>25.83</td>
<td>0.00</td>
<td>9.66</td>
<td>15.64</td>
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<tr>
<td><strong>T&lt;sub&gt;2&lt;/sub&gt; - Thiram @ 2g kg&lt;sup&gt;1&lt;/sup&gt;</strong></td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - Cloth bag</td>
<td>27.53</td>
<td>27.15</td>
<td>26.84</td>
<td>23.90</td>
<td>26.14</td>
<td>0.00</td>
<td>5.00</td>
<td>9.86</td>
</tr>
<tr>
<td></td>
<td>C&lt;sub&gt;2&lt;/sub&gt; - Polythene bag</td>
<td>27.53</td>
<td>27.47</td>
<td>27.09</td>
<td>24.24</td>
<td>26.37</td>
<td>0.00</td>
<td>2.66</td>
<td>3.87</td>
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<tr>
<td><strong>T&lt;sub&gt;3&lt;/sub&gt; - Activated clay @ 1:100</strong></td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - Cloth bag</td>
<td>27.32</td>
<td>27.07</td>
<td>26.71</td>
<td>23.82</td>
<td>26.00</td>
<td>0.00</td>
<td>7.00</td>
<td>13.15</td>
</tr>
<tr>
<td></td>
<td>C&lt;sub&gt;2&lt;/sub&gt; - Polythene bag</td>
<td>27.32</td>
<td>27.20</td>
<td>26.94</td>
<td>23.95</td>
<td>26.12</td>
<td>0.00</td>
<td>4.66</td>
<td>5.80</td>
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<tr>
<td><strong>T&lt;sub&gt;4&lt;/sub&gt; - Halogens @ 3g kg&lt;sup&gt;1&lt;/sup&gt;</strong></td>
<td>C&lt;sub&gt;1&lt;/sub&gt; - Cloth bag</td>
<td>27.30</td>
<td>27.05</td>
<td>26.64</td>
<td>23.77</td>
<td>25.95</td>
<td>0.00</td>
<td>9.66</td>
<td>15.50</td>
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<tr>
<td></td>
<td>C&lt;sub&gt;2&lt;/sub&gt; - Polythene bag</td>
<td>27.30</td>
<td>27.17</td>
<td>26.81</td>
<td>23.88</td>
<td>26.05</td>
<td>0.00</td>
<td>6.33</td>
<td>8.14</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>27.33</td>
<td>27.15</td>
<td>26.69</td>
<td>23.84</td>
<td>26.02</td>
<td>0.00</td>
<td>7.71</td>
<td>12.10</td>
</tr>
</tbody>
</table>

**SEd:**
- T: 0.30
- C: 0.17
- P: 0.21
- TC: 0.30
- CP: 0.52
- TP: 0.74
- TCP: 0.35
- T: 0.20
- C: 0.50
- P: 0.35
- TC: 0.61
- CP: 0.86

**CD:**
- T: 0.60
- C: 0.35
- P: 0.42
- TC: 0.85
- CP: 1.04
- TP: 1.47
- TCP: 0.70
- T: 0.41
- C: 0.50
- P: 0.99
- TC: 0.70
- CP: 1.22
- TP: 1.72

*(P=0.05)*
Protein content was estimated using the procedure described by Alikhan and Youngs, (1973). Bruchid infestation was worked out for each treatment and expressed in percentage. Four replicates were used for each analysis. The data were statistically analyzed after Snedecor and Cochran, 1967.

RESULTS AND DISCUSSION

Dry dressing treatments of freshly harvested lablab seeds with different chemical formulations effective in reducing seed deterioration under natural ageing conditions. Lablab seeds treated with different chemicals and stored in two containers revealed that, moisture content was not altered in seeds stored in polythene bags (8.00 to 8.28%) up to six months irrespective of treatments. Among the different treatments, the seeds treated with thiram @ 2 g kg$^{-1}$ maintained the lowest moisture content of 8.39% throughout the storage period in polythene bag compared to control (9.12%).

The rate of increase in moisture content for seeds stored in cloth bag was more and it was less in polythene bag (Fig. 1). The seed quality parameters viz. germination, drymatter production and protein content were decreased with increase in storage period. While the seeds treated with thiram and stored in polythene bag recorded the maximum germination (80%) (Fig.1), drymatter production (134 mg seedling$^{-1}$) (Fig. 2), protein content (24.24%) (Table I) and minimum leakage of electrical conductivity (0.940 dSm$^{-1}$) (Fig. 2) and bruchid infestation (9.58%) (Table I) over control (60%, 110 mg seedling$^{-1}$, 23.67%, 1.107 dSm$^{-1}$ and 28.19%, respectively). Seed treatment with capton or thiram compounds separately or in combination with suitable insecticides to maintain better germination in storage was reported by Gupta et al. 1999 in mung bean.

In pulses, the pulse beetle is the major problem both in field and storage conditions.
Bruchid enter the store along with harvested seeds and start multiplying in more congenial environment of this store. In the present study, seeds treated with thiram and stored in polythene bag maintained low incidence of bruchid infestation (9.58%) followed by activated clay (18.65%) up to one year. The results were in conformity with Geethalakshmi and Venugopal (1998) in green gram. The same treatment recorded minimum electrical conductivity for both in cloth (0.987 dSm⁻¹) and polythene bag (0.940 dSm⁻¹) compared to control (1.134 and 1.107 dSm⁻¹, respectively) (Fig. 2). The increased electrical conductivity of other treatments might be due to faster deterioration of cell membrane which leads to autoxidation of poly unsaturated fatty acids in the membrane involving free radical chain reactions (Doijode, 1988). In the present study, the result revealed that irrespective of treatments, the seeds stored in 700 gauge polythene bag under went minimum deterioration compared to those in cloth bag. The superiority of 700 gauge polythene bag with higher germination (Fig. 1) and vigour may be due to its moisture vapour proof nature which prevents the fluctuations in moisture content of seeds. Cloth bag being moisture pervious, the seeds stored in it were subjected to fluctuations in seed moisture and favoured harboring of fungus and insects which are responsible for the deterioration of seeds. The results were in conformity with Arulbrabhu (1998) in bole bean. The more fundamental reasons for storing of seed is to preserve the physiological quality by minimizing the rate of deterioration (Basu, 1976).

In the present study, the result revealed that lablab seeds treated with thiram @ 2g kg⁻¹ and stored in polythene bag (700 gauge) would help to maintain the seed quality without loss of vigour, viability and from bruchid infestation up to one year under ambient conditions.
REFERENCES


