Storage of Chili Peppers Under Different Conditions

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Introduction

If green chili pepper storage were feasible, canneries could extend their season several weeks after the field harvest is completed. This information might also be applicable in long distance shipping of fresh chili peppers.

The purpose of our study was to determine the following: 1) desirable harvest time for best storage, 2) optimum storage temperature for chili peppers, 3) desirable type of bag for storage, and 4) allowable length of storage for chili peppers.

Procedures

Chili peppers cv. `New Mexico 6-4' were harvested by commercial crews on September 13 and October 1, 1984, from `Curry Farms' in Cochise County. Peppers were transported to the laboratory in plastic bags. In the laboratory, peppers were sorted to remove those with missing stems, blemishes, mold, red, or misshapen. Twenty peppers were placed in each polyethylene bag (8" X 4" X 18"; 1.5 mm thick) and tied shut. The bags had sixteen holes cut in them at regular intervals.

Bags with peppers were stored at 40, 45, or 50°F with approximately 90% relative humidity. At 45 and 50°F, half of the polyethylene bags were sealed with no holes. At the second harvest, some peppers were also stored in burlap or net bags at 45°F. Chili peppers were stored for 23 or 30 days. Each combination of treatments with polyethylene bags was replicated three times, with each replication being a bag.

Fresh weights of peppers were taken initially, and then once every week until the end of storage. Visual counts of fruit which were red, shriveled or moldy were also made weekly. At the end of storage, fruit were sorted as good and usable or as bad and not usable. Those not usable were further sorted into the following categories: 1) red 2) shriveled 3) moldy. Numbers and weights of fruit were recorded in each category.
Results and Discussion

Harvest time only had a slight effect on usable fruit after 23 or 30 days of storage, with fewer usable peppers from the first harvest (see Figure). More peppers from the first harvest turned red during storage, suggesting they may have been closer to ripening at harvest time. Harvest time had no major effect on weight loss after 30 days of storage (Table 1).

Storage temperature had an effect on usable peppers (see Figure). After 23 days of storage, more usable peppers were present at 45°F than at 50°F due to more red at 50°F. At 40°F more peppers were shriveled than at 45°F but this did not always result in differences in usable peppers. Mold was a problem at all temperatures. After 30 days of storage, more usable peppers were present at 40 and 50°F than at 45°F. Still more peppers were red at 50°F and shriveled at 40°F, but mold problems were worst at 45°F. These data are not in full agreement with previous studies where peppers did best at 45°F after 23 as well as 30 days. But in those studies, mold was not as great a problem. Table 1 shows that overall percentage weight loss was greatest at 40°F.

Polyethylene bags were more desirable than burlap or onion bags. Table 1 shows that weight loss from peppers was almost 11% in burlap or onion bags compared to less than 5% in polyethylene bags. In addition, only 52% of the chili peppers stored in burlap or onion bags were usable after 30 days of storage with unusable mostly shriveled (21%) but also some red (7%) and some moldy (20%).

Peppers stored better in sealed than unsealed bags. Table 1 shows that weight loss was less in sealed bags. Also more usable chili peppers were present in sealed bags due mostly to fewer red ones (data not shown).

Peppers stored fairly well for 23 days but significant decreases in usable chili peppers were observed after 30 days (see Figure). These decreases were largely due to increased mold problems after 30 days. In addition, weight losses were continually increased over time.

In summary, chili peppers could potentially be stored for later use by canneries. These studies show the potential of storing peppers for two to three weeks without substantial loss. The ideal storage temperature seems to be 45°F. Sealed polyethylene bags were better than the other bag types tested. However, further studies need to be done under conditions at the cannery.
Table 1. Percentage Weight Loss or Gain in Chili Peppers After 30 Days of Storage

<table>
<thead>
<tr>
<th></th>
<th>Polyethylene Bags</th>
<th>Burlap or Onion Bags</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsealed</td>
<td>Sealed</td>
</tr>
<tr>
<td><strong>First Harvest</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40°F</td>
<td>-5.5 ± 0.7</td>
<td>---</td>
</tr>
<tr>
<td>45°F</td>
<td>-2.2 ± 1.1</td>
<td>+0.3 ± 0.1</td>
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<tr>
<td>50°F</td>
<td>-2.7 ± 0.9</td>
<td>+0.2 ± 0.2</td>
</tr>
<tr>
<td><strong>Second Harvest</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40°F</td>
<td>-4.3 ± 0.9</td>
<td>---</td>
</tr>
<tr>
<td>45°F</td>
<td>-2.0 ± 0.3</td>
<td>-0.1 ± 0.3</td>
</tr>
<tr>
<td>50°F</td>
<td>-1.4 ± 0.2</td>
<td>-0.2 ± 0.0</td>
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