INTRODUCTION

Management Practices to Maintain Dry Bean Grain Quality

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ABSTRACT

Dry bean (Phaseolus vulgaris L.) quality characteristics can vary due to differences in the physical, chemical, and biological properties of the harvested crop. Grain quality can be affected by the conditions during harvest, handling, processing, storing, and transporting the beans. The objective of this research was to evaluate the effect of storage conditions on color and the development of mold growth in dry beans harvested in 2000. Beans were stored at 4.4 or 26.7°C under laboratory conditions for 8 months; beans were also stored at 4.4°C for 14 months. The results indicated that bean color and mold growth varied with the storage conditions.

OBJECTIVES

The objectives of this research were to determine the principal factors that contribute to the lightness, redness, and yellowness of pinto beans harvested from the North Dakota Research Extension Center field in 2000. Beans harvested on September 24 were stored at 4.4°C and 140 g kg⁻¹ moisture content for 8 months. The results indicated the following factors affected color and mold growth:

- Duration of storage.
- Temperature, humidity, and moisture levels.
- The moisture content and paper bags to prevent mold growth.

RESULTS AND DISCUSSION

Table 1. Hunter-L values (whiteness) for dry bean stored at various temperatures and humidities.

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Humidity</th>
<th>Moisture (g kg⁻¹)</th>
<th>L-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4</td>
<td>30</td>
<td>140</td>
<td>49.2</td>
</tr>
<tr>
<td>4.4</td>
<td>30</td>
<td>160</td>
<td>49.2</td>
</tr>
<tr>
<td>26.7</td>
<td>30</td>
<td>140</td>
<td>49.2</td>
</tr>
<tr>
<td>26.7</td>
<td>30</td>
<td>160</td>
<td>49.2</td>
</tr>
</tbody>
</table>

The results indicate that color and mold growth varied with the storage conditions. Beans stored at 4.4°C and 140 g kg⁻¹ moisture content had the lightest color (L-value) and the lowest mold growth. Beans stored at 26.7°C and 160 g kg⁻¹ moisture content had the darkest color (L-value) and the highest mold growth. The results indicate that temperature and humidity are the most important factors that affect color and mold growth.

CONCLUSIONS

The results indicate that temperature and humidity are the most important factors that affect color and mold growth. Beans stored at cool temperatures and in the absence of humidities were the best for maintaining color and mold growth.

REFERENCES

