QUALITY OF RED RIVER VALLEY POTATOES IN VARIOUS TYPES OF CONSUMER PACKAGES1,2

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There is a growing tendency toward packing potatoes in consumer packages. For this reason, experiments were conducted to determine the

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1 Report of a study made under the Research and Marketing Act of 1946.
2 Dr. M. A. Smith and Mr. Vincent A. Reubelt, of the Division of Fruit and Vegetable Crops and Diseases, assisted with some of the inspections. Some of the potatoes used in these experiments were furnished by the Red River Valley Potato Growers Association. Packages used in these tests were furnished by John Whitnack and Walter Fankhanel, of the Associated Potato Growers, Grand Forks, N. Dak; J. B. Sickel, of the International Paper Co., Chicago, Illinois; Dr. Wm. Aldrich, of the American Fruit Growers Inc., Hagerstown, Md.; Food Packaging, Milwaukee, Wisconsin; Shellmar Products Corp., Mt. Vernon, Ohio; and Flexible Package Co., Chicago, Illinois. The cooperation of these individuals and firms is gratefully acknowledged.
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merits of various types of packages in protecting potatoes from loss of market quality. Special consideration was given to the influence of various types of packages on greening resulting from exposure to light (frequently referred to as sunburn) as this is an important defect found in retail stores. Studies on the Boston, Massachusetts and the Maine markets showed that such greening was second only to cuts and bruises in importance as a grade defect in Maine potatoes (4). A similar observation was made on the New York City market (2) where it was found that more than a fifth of the external defects were caused by greening. Studies by the Oregon Experiment Station (3) showed that greening occurred in 23.3 per cent of the Oregon U. S. No. 1 potatoes on California markets. No greening was found on potatoes in paper bags in the Oregon studies. Other important factors in loss of salability, such as decay and weight loss, were also considered in comparing packages. Since washing potatoes is a common practice, studies of the effect of washing and different degrees of drying on keeping quality were also made. In some of the tests potatoes treated with red colored wax were included because in the Red River Valley this was a standard practice with washed red potatoes during the 1949-1950 shipping season.

**Description of Bags Used**

The following types of bags were used during the course of these experiments:

1. Solid paper, double wall, wet strength.
2. Paper, with mesh window, double wall, wet strength. Window approximately $3\frac{3}{4} \times 7$ inches on the side covered with $\frac{3}{4}$ inch mesh material.
3. Cotton mesh, made of $\frac{3}{8}$ inch cotton mesh, with a tightly woven band around the center. This band occupied about $\frac{1}{3}$ of the area. Both purple and orange colored bags were used.
4. Paper mesh, made of $\frac{1}{4}$ inch twisted paper mesh material. This bag also had a solid band similar to that in the cotton mesh bags. Both purple and orange colored bags were used.
5. Elastic top polyethylene. This bag had a $1\frac{3}{4}$ inch diameter top opening which could be stretched to 5 inches for filling.
6. Elastic top polyethylene, perforated (like No. 5, except for eighteen 5/16-inch holes in the sides).
7. Elastic top pliofilm, perforated. This bag had eighteen 5/16-inch holes in the sides and an elastic top like the polyethylene bag.
8. Tied top polyethylene. This bag had an open top which could be tied shut after filling.