Since washing is becoming more and more a standard practice with table-stock potatoes, there is considerable interest in whether it is necessary to dry late-crop potatoes. The tests described in this report were conducted to determine the carrying quality of washed potatoes shipped late in the winter, dried by two different methods and not dried.

The three treatments used were as follows:

A. The potatoes were not dried after washing but were run over a water eliminator consisting of a series of blanket-covered rollers, each of which was in contact with a steel wringer roller underneath. This removed some of the free water from the surface of the potatoes but left them still rather wet. The potato temperature averaged $38^\circ$ F. after this treatment.

B. The potatoes were passed through a warm water bath and then dried in a hot air evaporator unit. The temperature, after drying, averaged $51^\circ$.

C. The potatoes were dried in the hot air evaporator unit. After this drying, the potato temperature averaged $44^\circ$.

**Materials and Methods**

*Descriptions of Drier and Treatments*

The drier used, which was developed by the Agricultural Engineering Division of the University of Minnesota, consisted of 3 principal parts: (1) a warm water bath; (2) a furnace for heating the water; and (3) an evaporating chamber. The potatoes were washed in a conventional cold water washer which consisted of a series of brushes underneath and sprays overhead. Those to be dried by treatment B were then passed through the warm water bath maintained at $120^\circ$ F. and then through the evaporating chamber. The function of the warm water bath was to heat the potatoes to increase subsequent evaporation of the water in the evaporating chamber. The potatoes remained in the warm water bath 2 minutes and in the evaporating chamber 5 minutes. The warm water bath was heated by circulating the water through 3 banks of coils in an oil-fired furnace. A fan with forward curved blades circulated 2000 c.f.m. of air from the outside, the shipping room, and the combustion chamber of the furnace through the evaporating chamber, counter to the flow of...
potatoes. Air temperature in this chamber ranged from 77° F. when the
furnace burner was off to 133° when it was on.

The potatoes given treatment C were dried in the evaporating
chamber by hot air alone with the furnace operating continuously.

Description of Potatoes Used

Six lots of potatoes (Lots 1 to 6, inclusive) were used in each
test in 1950 (Tests 1 and 2) and 5 lots (Lots 7 to 11, inclusive) in
each test in 1951 (Tests 3 and 4). The potatoes used in tests 3 and 4
were especially selected from lots that contained tubers affected with late
blight, but those obviously affected were discarded in grading. Two
50-pound bags of each lot were used for each of the 3 treatments (A,
B and C) in each test. This made a total of 44 bags (4 of each of the
11 lots) for each treatment and a total of 132 for the entire experiment.

Descriptions of the various lots of potatoes are given in table 1.

Transit and Holding Conditions

In each test, the test bags of dried potatoes were shipped in cars
loaded with dried potatoes and the test bags of non-dried potatoes were
shipped in cars loaded with non-dried potatoes. In test 1 shipment of
the non-dried potatoes was not made until 3 days after the dried potatoes
because of a transportation tie up caused by stormy weather. During
this delay the test bags were surrounded with other bags of non-dried
potatoes on the warehouse floor at a temperature of 37° F. In all other
tests both dried and non-dried test bags were shipped either on the same
day or within 2 days of each other. The cars in test 2 were shipped under
standard ventilation. In all other tests, they were shipped under Carriers
Protective Service (C. P. S.)

Weight loss and condition were determined by examining half of
each sack soon after arrival in Chicago and the other half of each sack
after a 1-week holding period at 70 to 72° F. to simulate store conditions.

Temperatures in transit, shipping dates and inspection dates are given
in table 2.

RESULTS

Weight Loss

As shown in table 3, weight loss in transit was low regardless of
method of drying. However, it was significantly higher in the dried than
in the non-dried lots. Apparently the extra handling involved in drying
caused an increase in skinning and minor bruises, making the potatoes
more subject to weight loss.

Damage Due to Bruising

Damage due to bruising was determined in 1950 only. There was no
significant difference among the 3 treatments.

Decay

Decay (mostly Fusarium dry rot) in 1950 was very slight in all
treatments, and there was no significant difference between them. In
1951, lot No. 9 had an appreciable amount of late blight rot on arrival
in the potatoes that were not dried or were dried with warm water and
warm air (Treatments A and B). However, this lot when dried with
warm air only (Treatment C) had a very small amount of late blight