

Choosing

the

Chippers

Paul M. Bessey

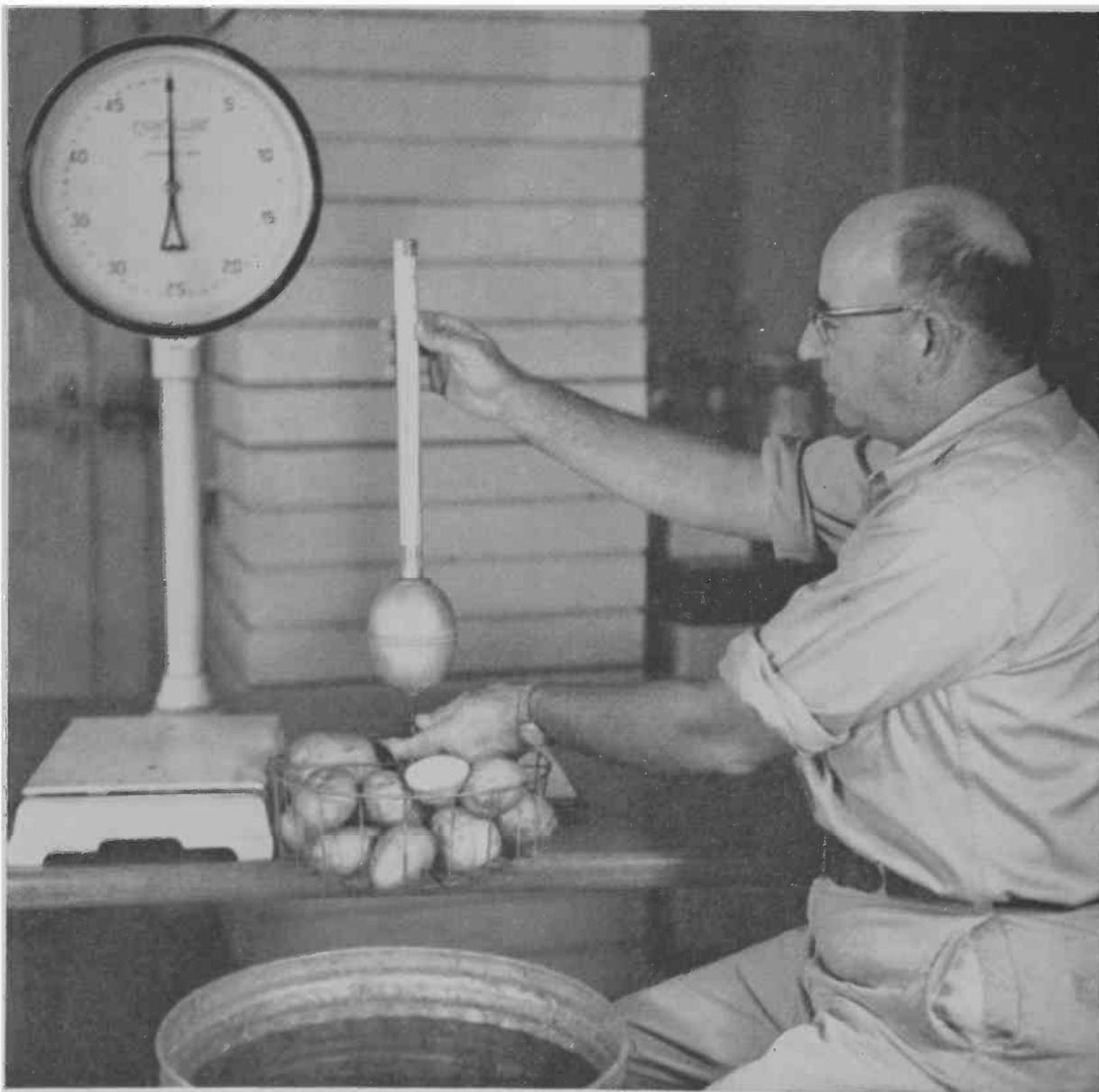
Two lots of potatoes taken from the same field, actually from the same bag, were sliced thin and fried together at 320° F in a deep fat fryer. Chips from one lot turned out dark and burned looking — commercially unacceptable. Potatoes from the other lot were fried a light golden tan and, with a dash of salt, delicious to snatch and devour when the researcher's back was turned. What made the difference?

Dr. Bessey is an assistant horticulturist stationed at the Mesa Experiment Station.

The tubers were of the same variety, and both lots were stored for three weeks, but one lot was stored at 38° F and the other lot at 48° F. Storage temperatures, it seems, have a direct bearing on frying quality. At lower temperatures more sugars accumulated, following breakdown of starch reserves in the potatoes.

At 48° F all the converted sugars were consumed by the higher respiration rate. Then in the frying process these sugars combined with free amino acids (released in the breakdown of cell proteins) and the dark brown, unacceptable potato chips resulted.

USING A FLOAT measurement and a tank of water, Earl Elson measures specific gravity of different lots of potatoes.



Potato studies in 1962 at the UA Mesa Experiment Station will cover all phases of variety testing, irrigation, fertilizers, harvesting and storage, and continuation of studies into chipping quality to meet the rapid growth of the potato chip industry in Arizona.

Important Competitive Factor

Arizona's chip potato industry finds this biochemical reaction a big competitive feature in supplying the nation with potatoes for chipping during the early part of Arizona's May-June harvest season. Arizona potatoes are dug, shipped and immediately fried without the need for cold storage or time-consuming, costly reconditioning. Northern grown potatoes, stored over winter, usually require five to seven weeks of high temperature storage to burn up accumulated sugars before they can be chipped.

The latter part of the marketing period brings competition from other southern states. Arizona's strength then comes from its more uniform weather and growing conditions. This results in a better guarantee of uniform high quality potatoes which the chip manufacturers require.

Needs Three Qualities

A potato acceptable for chipping needs three things. First, it must fry to a light golden tan color. Second, it must give a good yield of finished chips without taking up too much oil in frying. Lastly, the chips must be wholesome, crisp, and flavorful.

Arizona potatoes of the Kennebec variety do fit the bill, if they are allowed to mature before digging, are not excessively chilled before processing, are kept from sunburning and drying out during harvest, and are free from insects and plant diseases.

High specific gravity is the most important single quality indicator for the chip potato grower. Briefly stated, it tells how much heavier potatoes are than water. Some potatoes will almost float, others sink like a stone. The heavier they are, the higher the specific gravity. It all relates to tuber maturity and starch content. The more mature a tuber is, the more starch it contains and the higher is its specific gravity.

The standard chipping variety in Arizona is Kennebec with a typical specific gravity at harvest between 1.070 and 1.095 depending upon maturity. Red Pontiac, the most important fresh market potato in the state, consistently showed much lower specific gravity than Kennebec.

They Tried Them All

Potato chip frying tests were made on 32 varieties in the 1961 University of
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Arizona trials, using Kennebec as the standard of acceptability. With color as the criterion, Merrimack, Delus, and Katahdin yielded lighter and more attractive chips, while Red Pontiac, Pungo, Plymouth, and many others fried up too dark to be acceptable. Varieties with the highest yields of finished chips also had the highest specific gravity readings.

While a major objective of the University of Arizona potato research program is to obtain earlier maturity to reinforce the biochemical advantage of non-storage of chip potatoes, the over-all program strives to gain a better guarantee for top yields of uniform high quality potatoes.

Senator George D. Aiken says, "It is not the farmer so much as it is the public that would pay dearly if farm programs were abolished. Only the fact that some surpluses are produced holds retail prices for foods as low as they are today. Even a slight shortage would result in skyrocketing consumer prices.

"It is the economy of the United States, the security of America and the preservation of our soil and water resources that necessitate the operation of a basically sound and prosperous agriculture."

FRIED AT THE SAME temperature and same length of time, one lot of chips "fry up" an attractive golden tan, another lot dark and unattractive. The lady making the frying tests is Mrs. Paul Bessey.

USDA Entomologist, Lieberman, Is Now In New Post in Tucson

Mr. Frank V. Lieberman, an entomologist who has been doing alfalfa insect research work at Bakersfield, Calif., for the U. S. Department of Agriculture, was transferred at the beginning of this year to Tucson, where he will work closely with University of Arizona entomologists.

Dr. Lieberman will have offices and laboratory in a new building, soon to be built for the U. S. Department of Agriculture, on university-owned land near the UA Dairy Research Center on Allen Road.

Dr. L. A. Carruth, head of the UA Department of Entomology, tells us that Mr. Lieberman has had wide experience in the study of insects affecting alfalfa and related crops, and recently has been particularly concerned with studies of alfalfa plant resistance to insects.

North Dakotan Joins UA Extension Staff

Dr. Kenneth S. Olson joined the staff of this College of Agriculture the first of the year as State Program Leader for the Agricultural Extension Service.

Dr. Olson received his B.S. degree from North Dakota Agricultural College, his M.S. at Michigan State University and his Ph.D. from the University of Wisconsin. He has had experience in farming, public school teaching, as county extension agent and as member of the North Dakota state 4-H staff.

Dr. George Hull, Extension Director here, says the new program leader's responsibilities will be in the areas of training and studies, the regional winter school, program planning and procedures in agriculture, home economics and 4-H club work.

Dr. Olson will join Director Hull's administrative staff which includes Miss Jean Stewart, Mr. Howard Baker and Mr. Graham Wright.



March

- 9-10—Southwest Shade Tree Conference, U of A Campus
- 12-15—In-Service Training Conference for New Extension Workers, U of A Campus
- 17—FFA Field Day, U of A Campus

April

- 24-27—Arizona Egg Quality Grading & Marketing School, Poultry Research Center, Tucson

May

- 4—6th Annual Poultry Industry Day, U of A Poultry Research Center, Tucson
- 5—Annual Cattle Feeders' Day, U of A Tucson Farms

June

- 11-15—Town & Country Life Conference, U of A Campus

Ovid Martin, the AP's Washington farm reporter, writes that farm manpower is following horsepower on the decline. The number of horses and mules has declined from a peak of 25,000,000 head 30 years ago to around 3,000,000 a year ago, and farm employment averaged only 7,118,000 last year, compared with twice that many 35 years ago.

U. S. farmers employ 7.4 million workers, more than are employed in the steel industry, or the automobile industry, or transportation and public utilities combined.