RESEARCH NOTE

AN INEXPENSIVE LABORATORY METHOD FOR CASSAVA-STARCH EXTRACTION

Starch is the primary product obtained from cassava (*Manihot Utilissima* Pohl), a widely grown tropical tuber crop.

Determination of yields of starch produced by this crop requires a laboratory method. In general, present methods for starch estimation[1] require electronic equipment, polarimeters, or other optical equipment which is expensive and in many parts of the world difficult to maintain, or the use of laborious chemical methods.

In the course of cassava research in the Virgin Islands, we developed an inexpensive and simple method for quantitative starch extraction. Its use is reported in this Note.

Equipment includes an electric kitchen slicer, a high-speed kitchen blendor with the largest obtainable blades, a stainless steel 200-mesh sieve, a forced-draft drying oven, a balance and several cake pans (fig. 1).

During peak harvests, when large numbers of samples are collected and time does not permit prompt analyses, we put representative samples of tubers in polyethylene bags, and tie and store them in a kitchen-type deep freeze. When ready for extraction, we use the material as it is, without thawing.

Duplicate 50-gm. peeled subsamples are weighed from each field sample. They are extracted separately and the weight of starch per sample is reported as the average of the two.

Each sample is passed through the kitchen slicer into a stainless-steel mixing bowl, then into the blendor with 500 cc. of water. The sample is macerated for 5 minutes. The finely divided sample is washed quantitatively onto the sieve, using agitation and an additional 500 cc. of water. The fibrous material retained on the screen is thrown away. The material washed through the sieve is poured into a 9-inch x 9-inch x 2-inch aluminum cakepan, placed in the forced-draft oven at 85° C., and dried to constant weight, usually taking 6 to 12 hours.

[1] Official Methods of Analyses, Association of Official Agricultural Chemists, Washington, D.C., 4, 1960; Badenhuizen, N.P., General method for starch isolation: In Methods in Carbohydrate Chemistry; V IV, Starch, Sec. 1, Preparation of Starch and Starch fractions, Chap. 4, p. 14–5, 1964), Dept. of Botany, Univ. Toronto, Ontario, Canada; Nielsen, John P., Rapid determination of Starch, An Index to Maturity in Starchy Vegetables, Western Regional Res. Lab., Bureau of Agr. Chem. & Eng., USDA, Albany, Calif., 1943; Paine, H.S., Thurber, F.H., Balch, R.T., and Richee, W.R., Manufacture of Sweet Potato Starch in the United States, Repr. *Ind. Eng. Chem. 30*, 1331, Dec., 1938.

The dried residue is weighed and recorded as starch in percentage of fresh weight of sample.

A technician can run about 5 or 6 samples per hour, or 40 to 50 per day. The limiting factor is oven space. We believe that this method, obviously less accurate than the more sophisticated ones cited, gives a close approximation to the recovery of starch that would be obtained by a commercial

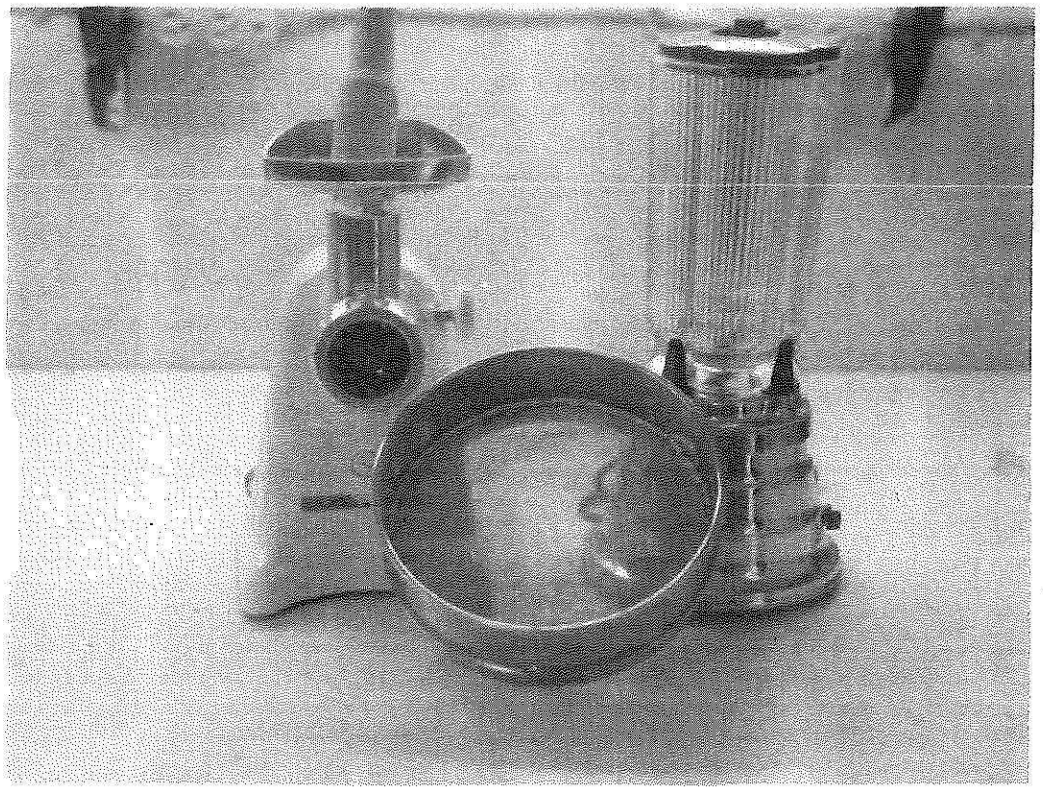

FIG. 1

mill. It is accurate enough to detect any differences of economic importance to a commercial processor of cassava.

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