METHODS FOR DETERMINING THE PERCENTAGE OF SEEDS, STRIGS, STEMS, AND LEAVES IN COMMERCIAL HOPS

C. G. MONROE AND D. D. HILL

THE seeds, strigs (the rachis of the hop strobile), stems, and leaves in commercial hops add little to the brewing value. Brewers generally consider seedless hops to be superior to seeded hops as the seeds are believed to impart undesirable flavors and odors to the brewed beverages. All of these materials add useless weight to the hops.

Brewmasters and hop dealers have made it a practice to estimate roughly the amount of impurities in a given sample. If analyses are necessary, the stems and leaves can be picked from the sample and the percentage determined accurately. The stickiness of the lupulin which covers the base of the bracts of the hop cone and the enclosed seed makes accurate physical analysis of this factor difficult. Lupulin also interferes with accurate determination of strigs.

At the request of the Oregon hop industry, experiments were initiated by the Oregon Experiment Station to study the physical and chemical properties of commercial hops. In this study it was necessary to determine accurately the percentage of seeds in a given sample. A comprehensive review of the literature on the subject revealed only two methods that had been used to accomplish this objective.

Epstein and Hubbard suggested a method in which the seeds were plucked from the cones by hand and the lupulin removed from the seeds by rubbing between the thumb and index finger. When the fingers became oily they were dipped in 50% alcohol and wiped clean. About 2 hours were required to determine the seed content of a 10-gram sample, which, according to Epstein and Hubbard, was the smallest sample that would give representative results.

Rabak offered a more practical method by which 20-gram samples were heated to 105°C for 6 hours to destroy the stickiness of the lupulin so that the hops could be threshed by pulverizing between the palms of the hands and the seeds then screened out. This method limits the output of a commercial laboratory to the capacity of its ovens.

MATERIALS AND METHODS

An experiment was set up for the purpose of developing a more practical method for arriving at seed percentages in hops. Three lots of hops appearing to

---

1Published as Technical Paper No. 312 with the approval of the Director of the Oregon Agricultural Experiment Station, Corvallis, Ore. Contribution of the Department of Farm Crops. Received for publication May 1, 1939.
2Graduate Assistant and Associate Agronomist, Farm Crops Department, Oregon State College, respectively.
4Rabak, F., Relation of seeds, leaves, and stems to the quality of hops and malt beverages. Printed and distributed by Materials Improvement Committee, Master Brewers' Association of America, Clinton, Iowa.