

## **Abstract**

The wet milling of maize is difficult to study in the laboratory because some of the required separation steps are challenging to implement at bench-scale. This work was conducted to develop an improved 100-g wet-milling procedure that better models the industrial process. Several separation steps were modified from previously reported methods. Among the changes, germ was recovered by a flotation/skimming technique that is normally used on larger-scale procedures. Starch was recovered by tabling, but the flow profile at the end of the table was changed to reduce gluten settling and the partitioning and pumping of slurry fractions was changed to allow the tabling process to begin immediately after fiber recovery. Gluten was dewatering directly on the table overflow, and starch was recovered from the table before drying. These modifications eliminated some problems associated with other procedures, e.g. the scraping of tabled starch to reduce protein contamination, the loss of germ due to size reduction, and the separate recovery of coarse and fine fiber fractions. Compared with routine tabling methods, the modified method used in this work produced starch with less protein (0.42 versus 0.55% for the maize variety tested); however, the improvement was achieved at the expense of a slightly lower starch yield (64.4 versus 65.4%). Standard deviations for the product yields were 0.28% for starch, 0.27% for gluten, 0.24% for fiber, 0.13% for germ, and 0.07% for total solubles. The procedure will be beneficial for some maize wet-milling experiments.