A SIMPLE DEVICE FOR THE DETERMINATION OF
POTATO TUBER SPECIFIC GRAVITY

S. F. FONG AND E. S. REDSHAW

ABSTRACT

A simple device consisting of a plastic rack with suspended wire
basket was developed. This device when used in conjunction with a top
loading balance greatly facilitates the determination of the specific gravity
of individual tubers.

INTRODUCTION

Often it is necessary to determine the range of specific gravity of
tubers from individual plants or from experimental plots. Three methods
of specific gravity determination are widely used: the brine floatation, the
hydrometer, and the weight in air and weight in water. These methods
have been reviewed in a previous publication (3). Of these, the only
method suitable for individual tubers is the weight in air and weight in
water method. Specific gravity can be calculated from the formula:

\[
\text{specific gravity} = \frac{\text{weight in air}}{\text{weight in air - weight in water}}
\]

or by a specific gravity calculator (1, 3).

Commercially available specific gravity balances are not of capacity
for potato tubers. The Mettler K7 balance plus the accessory hook (2)
had been used earlier; this, however, necessitates the purchasing of a
balance for a specific purpose and preparing a particular location to ac-
commodate the balance. This paper describes a simple device which may
be constructed from basic laboratory materials and used with a top
loading balance for the determination of individual tuber specific gravity.

MATERIALS AND METHOD

The necessary parts for the specific gravity measuring device are
shown on the bench in Fig. 1. They are, from left to right, a ½” plywood
platform (19” x 7” x 11”), a top loading balance (Mettler P 1200) and
a plastic rack, from which a wire basket is suspended. The rack was con-
structed by fusing together five pieces of semi-rigid type polyethylene
tubing (1 x 3/2”, 2 x 1/2”, 2 x 5/4”, O.D. = 3/8”). This was accomplished
by the use of a soldering gun (weller, 100/140 watts), regulated to 60
V. Fig. 2 shows the assembled apparatus in use for weight in water
determinations.

DISCUSSION

Within a certain limit, the dimensions mentioned above, are not
critical. For instance; since the height of the balance plus the outside
diameter of the tubing is less than 11”, the height of the plywood platform
can therefore be 11” or slightly less and the length can also be altered.

1 Alberta Potato Commission Research Unit, Department of Food Science, University
of Alberta, Canada.
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Fig. 1.—Necessary parts for individual tuber specific gravity determinations.

Fig. 2.—Assembled apparatus for the determination of tuber weight in water.