

COMMUNICATION TO THE EDITOR

Apparatus for Rapid Inspection of Corn for Aflatoxin Contamination

TO THE EDITOR:

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Examination of corn under ultraviolet light for possible aflatoxin contamination has been recognized as a useful screening test (1-5). A convenient device was assembled (Fig. 1) to allow inspection of 10-lb samples of whole corn in less than 10 min. The 10-lb sample size is necessary if representative, reproducible results are to be obtained (6,7).

Corn is loaded into a funnel that discharges onto a vibrating feeder. The funnel is adjustable so that a monolayer of corn can be made to move across the feeder tray under ultraviolet light (365 nm). The inspector can adjust the vibrating feeder speed. The feeder and light are enclosed in a cabinet to exclude ambient light. The inspector views the corn through a viewing port. Kernels and particles that exhibit bright greenish-yellow fluorescence (BGYF) are counted.

BGYF is indicative of aflatoxin contamination, but the count is not a quantitative measure of the aflatoxin content of the corn sample. In our evaluation, a relationship has been observed between count and aflatoxin content, which can be useful in evaluating corn receipts for acceptance. When the count was no more than 18 BGYF particles per 10 lb (4 particles/kg), then less than 2 of 100 batches contained more than 20 ppb of aflatoxin. When the count was greater than 18, one out of three batches contained more than 20 ppb. These observations were made by analyses of many corn samples, using a minicolumn method (8) or thin-layer chromatography (9) or both.

The apparatus is easily assembled from readily available parts. Nontechnical personnel can learn to use it without difficulty. The rapidity of the test and observed relationship can reduce the number of samples referred to the laboratory for the more time-consuming quantitative tests.

General usefulness of the device for other applications can be obtained by adjustments and alternate light sources, eg, inspection of granular sugar for small numbers of discolored or foreign particles. In inspecting sugar for black or discolored particles, addition of a magnet allows rapid sorting of iron or rust from other contaminants.

A publication concerning use of this device in actual survey of corn for aflatoxin contamination is forthcoming.

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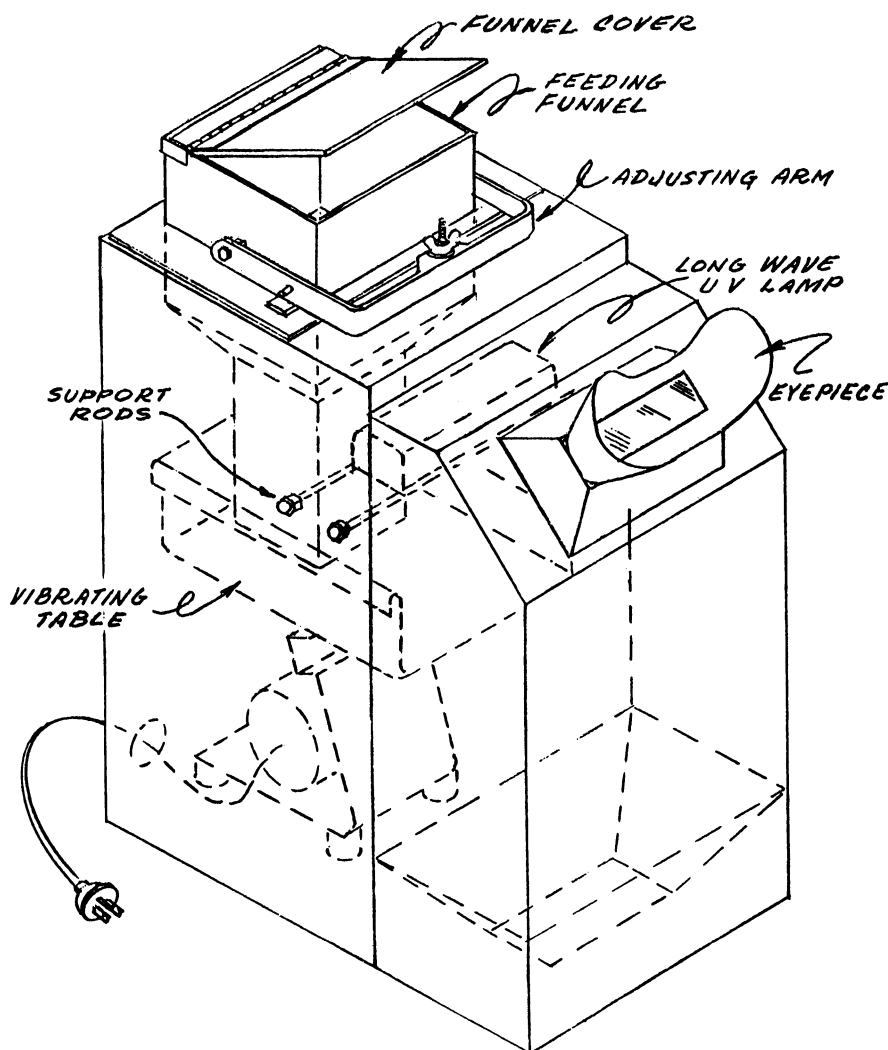


Fig. 1. Device for inspecting corn samples for aflatoxin contamination.

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