The correlation coefficient (r) between infestation counts and the damage index was 0.558, and not significant. Since the nature of the differential reaction among strains is not known, the low correlation coefficient could be explained on the basis of tolerance.

The variation in sod webworm infestation counts among strains suggests the possibility of resistance and might be attributed to preference, tolerance or antibiosis. This variability among bluegrass strains provides evidence that material for improved varieties is available with resistance to damage by sod webworms.

A PLOT HARVESTER1

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INCREASED demands on research time, higher labor costs, and the need to study agronomic practices under various environmental conditions necessitate mechanization in an agricultural research program. This note describes a self-propelled Massey-Ferguson No. 35 combine which has been remodeled for efficient harvesting of experimental plots (Figure 1).

Header length was reduced to cut a 6-foot rather than an 8-foot swath and the conventional bat-type reel was replaced with a blower-type fan which acts as an air reel3 (Figure 2). The air reel is manufactured in sections 32 inches long by 18 inches in diameter with sections connected to span the header width. Air is driven by a 4-paddle fan through a 4- by 32-inch opening in the bottom of the fan housing. Air flow may be directed by changing the pitch of the fan housing and by adjusting height of the air reel from the platform. Hydraulic cylinders placed on both ends of the reel unit and connected to the combine hydraulic system permit rapid adjustment of reel height. Fan speed is adjusted by changing the diameter of a variable speed pulley on the fan shaft. Fan speed of 250 to 400 rpm produces adequate air flow to push safflower into the combine, and a speed of 400 to 650 rpm is adequate for wheat. A hydraulic motor attached to the fan shaft can be used to power the air reel and regulate speed of the reel from the operator's platform. The reel is effective in controlling seed shatter and in conveying heads into the platform auger. The usual piling of seed beneath the auger fingers is also prevented. Short-strawed grains, 12 inches or less, may be fed uniformly into the machine.

The bin and grain elevator were removed, and a frame for housing an aluminum grain pan was built at the delivery end of the grain pan auger (Figure 3). The auger was fitted with wipers made from belting for a closer fit between auger and housing. These modifications provide a more rapid and better clean out than elevating seed into the bin.

A bell crank tightener was placed on the header drive to permit header parts to be disengaged at the end of the plots while grain is being threshed and delivered to the grain pan. As the platform of the combine reaches maximum height, the bell crank tightener disengages, and the header stops. Lowering the platform slightly engages the bell crank tightener, and the header is put into motion.

One minute between plots is sufficient time for clean out. Using thin-hulled safflower seed as a marker, alternate plots of thin-hull and normal-hull safflower were harvested and thin-hull seeds counted among the normal. A mixture of less than 1% occurred. More time between plots would have reduced mixtures still further.

This machine has been used for two years on safflower and wheat plots varying in length from 8 to 130 feet and has proved satisfactory. It measures 6 by 18 feet and is easy to load and transport on a conventional tiltbed trailer or truck. A small self-cleaning plot harvester utilizing the air reel is now being contemplated.

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3 Air reel courtesy of Osteen-Quinn Company, Lamar, Colorado.