

Developments in Mechar

cotton harvester further improved toward full efficiency

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Few California farmers grow cotton exclusively.

They also grow barley, flax, alfalfa, grain sorghums, sugar beets, potatoes, fruit, and truck crops. Many of them have livestock enterprises—beef, hogs, sheep, and dairies. They grow cotton only if it fits into crop rotations and if they believe it will be profitable.

The 1948 crop—800,000 acres in round figures—was nearly 50% over 1947. A further increase is predicted for 1949 but at a lesser rate.

Progress in plant breeding is now spotlighted by the new Acala 4-42 strain with its superior quality of fiber.

Modern Machines

The main progress in mechanization is the trend to mechanical harvesting. Last year between 70 and 80 cotton pickers of the spindle type were used in California. This year there may be five times as many.

California is well suited to mechanization. Its fields are large and level and its farmers are accustomed to using power machinery. Weather conditions are generally favorable. High average yields per acre of cotton in the state make for large output per machine per hour.

The stripper type harvester has not been so well received in California's high-producing fields. There is the possibility that it may find a place in stripping fields which have been harvested by the spindle type machines, as well as in fields of relatively small plants.

New gins are being built with a full complement of modern machinery, and new equipment to better handle mechanically harvested cotton is being installed in older gins.

Irrigating labor in California amounts to more than chopping and hoeing labor as a rule, but since it is spread over the growing season it does not cause serious peak labor demands. The irrigation furrows and ditches complicate the other cultural operations and prevent the use of methods found to be good in nonirrigated cotton districts.

Attention is being given to so-called precision planting of cotton seed. Sugar beet and vegetable seeds now can be planted with greater precision by machine

than hand labor will plant them. Uniform spacing of single plants is desirable for sugar beets where uniformity in size aids mechanical harvesting but there is some question as to the importance of spacing and thinning of cotton. Given optimum moisture and fertility conditions over which some control by irrigation is possible, it may not be necessary to thin or chop cotton except for weed control.

Weed and grass control is one of the major problems in mechanization, not only in labor costs but in its influence on mechanical picking.

Johnson grass, Bermuda grass, water grass, and the late summer grasses which come on after the last cultivation give some trouble. They not only reduce harvesting efficiency but they entangle the lint and cause grassy bales. Flame and sprays supplementary to cultivation have been tried but a definite answer is elusive. In the matter of flaming and spraying, the equipment industry is ahead of the plant physiologists and chemists. Flame and grass sprays can be applied if the chemists and plant scientists will tell what to use, when and how much.

Rarely do agricultural implements reduce labor requirements and cash costs so greatly as the cotton picker does. Nevertheless better performance in picking efficiency, quality, and machine costs is wanted. To achieve these improvements requires the full coöperation of the growers, the ginners, the agronomists, the engineers, and the manufacturers.

California cotton plants have many bolls near the ground where they escape the spindles. It is not uncommon for one third of the bolls to be within six inches from the ground, in which zone major losses occur. Perhaps pickers can be designed to lift up more of these low bolls but probably there are limitations. By breeding and cultural methods it is hoped the plants can be induced to fruit higher off the ground without reducing the yield.

The effect plant spacing might have on boll position, whether bed planting is better than our customary flat planting, and whether plants should be spaced single file, or in hills or bunches for increased efficiency of the harvester are being investigated.

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Above. Improved cotton harvester

Below. Brush-type almond harvester attached to standard tractor



Newly designed prune catcher is pushed by tractor onto conveyor belts to be carried



