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D. E. Wiant

R. L. Patty

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# The Two-Row Cultivator Converted Into A Weed Control Machine

By

D. E. Wiant and R. L. Patty



The ordinary two-row cultivator converted into a weed control machine and substituting for the field cultivator on small areas.

Department of Agricultural Engineering  
Agricultural Experiment Station  
South Dakota State College  
Brookings, South Dakota

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# The Two-Row Cultivator Converted Into A Weed Control Machine

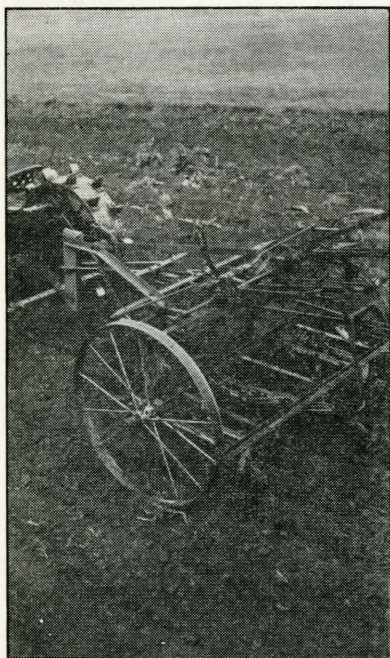
By

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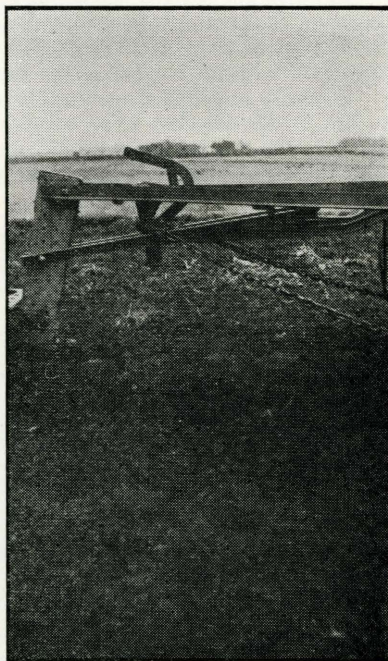
## Introduction

Under the new soil conservation program, it is planned to make payments for weed control and for summer fallow. Where the acreage is so small that it will not justify the purchase of a field cultivator or a similar implement, the two-row cultivator can be used to give this service in addition to cultivating row crops. The two-row cultivator can be converted easily and quickly into a weed control machine. The converted cultivator is satisfactory for weed control or summer fallowing.

The type of cultivator that lends itself best to this conversion is the two-row, shovel type, horse-drawn cultivator. The single-row machine can be used, but the lister cultivator cannot.



**Fig. 1—The Weed Control Machine**  
This picture shows the position of the long braces and extra shovels. The parts that are added are shown in Fig. 3. The chain is used to take some of the strain.



**Fig. 2—A Simple Tractor Hitch**  
The tongue and tongue truck are removed. The various pairs of holes in the 2 inch by 6 inch piece make it possible to hitch to a tractor regardless of height of drawbar.



### Conversion Of A Two-row Cultivator Into A Weed Control Machine

This change consists simply in spacing the gangs and shovels the desired distance apart, holding the gangs in the desired position by means of braces, and mounting shovels between the gangs.

After the gangs are properly spaced, two long angle iron braces or stiffeners are fastened crosswise of all four gangs by means of U-bolts or clamps. These long braces, in addition to holding the gangs in position, make the machine more rigid. The shovels which are placed between the gangs, are mounted on short angle iron beams bolted to these long braces.

Chains are attached from a point on the front angle iron brace midway between each pair of gangs, to a suitable point on the frame near the hitch, in order to take part of the load from the frame of the cultivator. (See Fig. 2.)

In case the machine is to be pulled with horses, no change in the hitch is needed, but if a tractor is used the tongue and tongue truck should be removed and a suitable hitch devised with two pieces of angle iron and a 24 inch piece of 2 inch by 6 inch hardwood. On the experimental machine angle iron, 1½ inch by 1½ inch by ¼ inch, was used for the long braces and extra beams. This machine withstood very severe treatment.

No extra shanks are needed as one shank is removed from each gang. However, if extra shanks are available they can be left on the unit, when the unit is removed, and the shovels that are already in place will act as guides for setting the rest of the shovels.

After the machine is once made up the parts can be removed in units so that it will take but a few minutes to make the conversion from a row cultivator to a weed control machine. Disadvantages of this machine are that it has less clearance under the gangs and is not as flexible as a field cultivator.

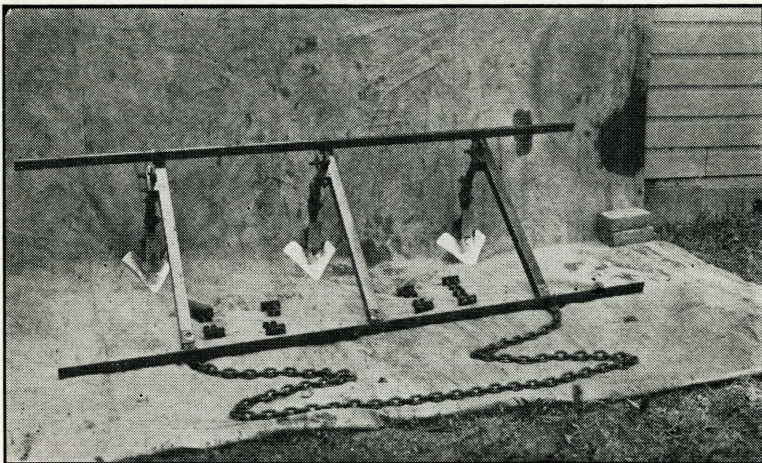


Fig. 3—The Parts Required to Convert A Row Crop Cultivator  
Into A Weed Control Machine  
The rear brace with the three beams attached is added or removed as a unit.

## Detailed Steps In Making A Weed Control Machine Out Of A Two-Row Cultivator

(See Fig. 1, 2, and 3)

The following steps constitute the procedure in making a weed control machine out of a two-row, shovel-equipped, horse-drawn cultivator.

- a. Fasten wheels so that they will not pivot.
- b. Remove middle shank from each gang if gangs are three shovel type. (These shanks will be placed between the gangs later.)
- c. Space shovels, or shanks, on gangs 8 inches apart. (8 inches from center of shovel to center of shovel).
- d. Space the two inside gangs so that the distance between the inside shanks is approximately 16 inches. (Center of shovel to center of shovel).
- e. Move each outside gang until the distance between the inside shanks of each pair of gangs is approximately 16 inches. It may be necessary to shift shanks from one side of the beam to the other in order to get the proper spacing.
- f. Mount the long angle iron braces across the gangs. Fasten these to the gangs by bolting to one beam on each gang. A simple way to do this is to drill a hole in the angle iron on either side of the beam and use two bolts and a short piece of strap iron as a U-bolt.
- g. Mount the three angle iron beams between the long braces and locate the three shanks. The beams can be bolted directly to the long braces.
- h. Attach chains from front end of beams that were placed between the pairs of gangs, to hitch.
- i. Mount shovels. **Set shovels carefully.**
- j. Devise hitch, if tractor is to be used.

The result will be an efficient weed control machine 7½ feet wide, equipped with eleven shovels. This machine will be a good load for four horses or a small tractor.

The same spacing of gangs or shovels should be made, whether the gangs are equipped with two, three, or four shovels. However, if the weed control machine is to be used almost exclusively for quack grass eradication and not for summer fallowing, the shovels may be spaced as close as 6 inches from center of shovel to center of shovel.

No attempt should be made to drill the required holes without suitable equipment. Either the location of all holes should be marked and the pieces taken to a shop or garage to be drilled or the pieces should be clamped in position.

If clamps are used and no holes are bored, rectangular pieces rather than angle iron should be used for the long braces.

The following material is needed to convert a two-row cultivator into a weed-control machine:

Two pieces angle iron, 1½ inch by 1½ inch by ¼ inch, 6½ feet long.

Three pieces angle iron, 1½ inch by 1½ inch by ¼ inch, 32 inches long.

Two pieces ¾ inch chain or rod 5 feet long.

Eight pieces strap iron 3 inches long (for clamps).

Two dozen 7/16 inch machine bolts 3 inches long.

If a tractor hitch is used, additional parts needed are:

Two pieces angle iron or strap iron 4 feet long.



One piece of wood 2 inch by 6 inch, 24 inches long. (hardwood preferred)

One piece strap iron 2 inch by  $\frac{1}{2}$  inch, 8 inches long (this should have a half turn) to bolt to drawbar.

One-half dozen  $\frac{1}{2}$  inch bolts 4 inches long.

### Shovel Equipment To Use

In order to get the best results with the weed control machine and keep the expenditures at a minimum, the type of shovel to be used should be carefully considered. The type of shovel required depends entirely on the use that is to be made of the machine. It would be false economy to get along without the proper shovels, and two sets may be required.

The recommendations made are based on the results of field trials and on the recommendation made by manufacturers of cultivator shovels.

For quack grass—especially heavy infestation, use a long narrow shovel with a curved face—a shovel not over 2 inches wide. Such a shovel will tear the roots out without cutting them. These shovels may be spaced as close as 6 inches from center of shovel to center of shovel if machine is used only for quack grass eradication.

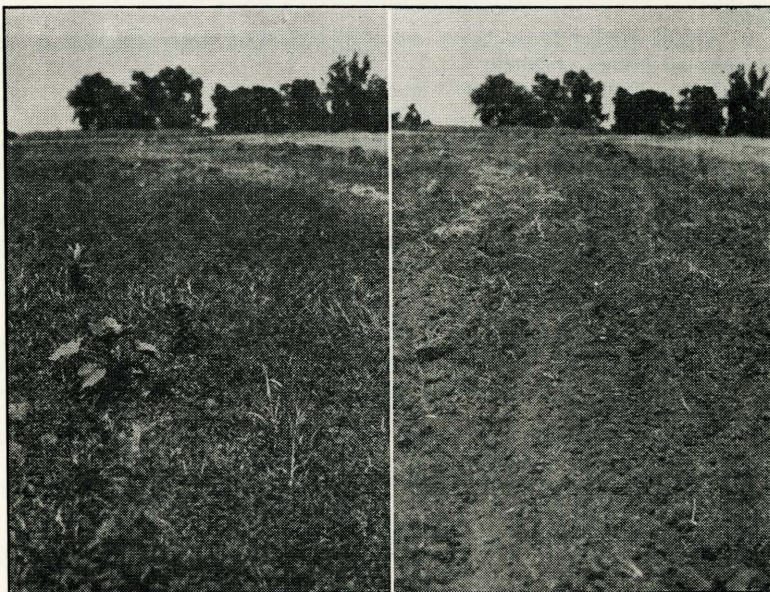


Fig. 4.—A Heavy Mat of Field Bindweed or "Creeping Jenny"

This perennial weed is one of the most difficult to control. It is very deeply rooted and a long period of black cultivation is necessary to starve it out.

Fig. 5.—The Work of the Weed Control Machine

This picture shows the same area shown in Fig. 4 after it was gone over twice with the weed control machine equipped with 8 inch duckfoot shovels.



For field bindweed or "creeping Jenny" use duckfoot shovels, or sweeps, eight inches wide or wider. For heavy infestation it may be difficult to get the duck foot shovels to enter the ground the first time over especially if the ground is hard. By going over the field first with a disk harrow the vines are cut and the ground loosened enough so that the shovels will penetrate. It was found that disking a heavy growth of field bindweed before using the duckfoots decreased bunching up under the gangs.

Some manufacturers recommend that a quack grass type shovel be used on bindweed the first time over or even the first few times, to work the roots to the top of the ground. However, before quack grass shovels are purchased, the shovels used on the row cultivator, especially if they are the spearhead or South Dakota type, should be tried out.

For leafy spurge, unless the growth is too heavy, use shovel equipment as for field bindweed. For an extremely heavy growth, narrow shovels may be needed.

The width of duckfoot shovels, or sweeps, to be used is largely a matter of preference. The wider shovels will not penetrate as well as the narrower ones. The wider shovels leave summer fallow land more ridged.



Fig. 6—The Importance of Using the Correct Type of Shovel On a Heavy Quack Sod

At the left is shown what can be done with the weed control machine when it is equipped with 8 inch duckfoot shovels. However it required 18 trips to accomplish this.

At the right is shown the result of using quack type shovels. It required only two trips to penetrate this heavy quack sod.

### Setting Of Shovels Is Important

Duckfoot shovels or sweeps should be set with the point lower than the wings of the shovel. This gives the shovel suction and makes it penetrate.

Quack grass shovels should be set so that the point makes an angle of approximately 30 degrees with the horizontal. Care should be taken to see that the shovel does not ride on the back of the point.

Regular row cultivator shovels should be set so that the shovel makes an angle of approximately 60 degrees with the horizontal. Too great an angle will prevent penetration, too small an angle will allow the shovel to ride on its' back and this also will prevent penetration.

A good way to set shovels is to set the cultivator on a level surface and put blocks under the wheels. Drop the gangs and adjust all the shovels to the same depth. When the cultivator is in operation make sure that every shovel is doing its best work.