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# LAND CLEARING WITH A BULLDOZER



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THE STATE COLLEGE OF WASHINGTON  
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# LAND CLEARING WITH A BULLDOZER



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# Land Clearing with a Bulldozer

by R. N. Miller, Extension Agricultural Engineer

## LAND CLEARING AN IMPORTANT ENTERPRISE IN WASHINGTON

Many thousands of acres of cutover land remain to be cleared in Washington. Land-clearing operations vitally affect the welfare of settlers and add new croplands to the state.

Settlers who are interested in purchasing and clearing logged-over tracts face these major questions:

1. What is the value of the land for farming?
2. What will be the cost of clearing it?
3. What are the most efficient and economical ways and means of clearing it?

## CHOOSE ONLY THE BEST CUTOVER LAND!

Wise settlers will clear only the best land available. A lifetime of labor and savings are often at stake when you buy a farm. Before buying, it is well to investigate the tract of land carefully and also to seek the advice of neighboring farmers, county agents, or other qualified individuals, who will be able to tell you more about the land than you may learn through a casual survey.



### What Is the Value of the Land?

When estimating the value of any tract of land, you ordinarily will want to know the answers to these questions:

1. Does the land have enough producing qualities to repay the original cost and also the cost of clearing, building, fencing, and making other essential improvements?
2. Does the land require expensive improvements, such as ditches, draining, leveling, and removal of rocks?
3. Does the land have a satisfactory location near good roads, electric power, schools, stores, organized communities, transportation, and farm co-operative purchasing and selling agencies? Is water available for use in the home and by livestock and for possible irrigation? Does it fit your own personal requirements for a successful farm home?

## ESTIMATE THE COST OF CLEARING!

Clearing land is often expensive, time-consuming, and laborious. Before beginning the job, estimate the cost of the job and decide whether you have enough money for the job. You may, in some cases, prefer to seed to pasture and delay the clearing 3 or 4 years, until the smaller roots and stumps have decayed.



### What Will the Cost of Clearing Be?

The total cost of clearing depends on (1) conditions over which you have no control and (2) conditions affected by management, such as the efficiency with which the clearing is done. The cost will also vary widely on different tracts of the same size, depending on such conditions as the amount of debris; the topography; the location of the land; the number, size, and kind of stumps; weather conditions at the time the work is done; and the type and depth of the soil. For example, a shallow, sandy soil is generally cleared easily and cheaply; but a deep loam with large, deep-rooted stumps always means expensive clearing.

## DO THE JOB EFFICIENTLY

The following are common methods of land clearing:

1. Bulldozing.
2. Blasting and pulling and piling.
3. Charpitting.
4. Forced-draft burning.

This bulletin discusses only the bulldozer method of clearing. *Charpitting Stumps* (Extension Bulletin No. 344) is also available.

## GOOD MANAGEMENT IMPORTANT

You will save time and money by getting the best equipment and men available. Practices such as the following will help to get the work done more cheaply and quickly: (1) complete the preliminary work, such as picking up, piling, and burning rotten logs, bucking up "down" logs, cracking the stumps with explosives, felling trees too large to be pushed over with the dozer, etc.; (2) do the clearing when the ground is hard enough to support the bulldozer easily and when the stumps and brush are dry enough for immediate burning; (3) burn the stumps and similar material while the dozing is being done.



REMOVE ROTTEN LOGS BEFORE DOZING

## Complete Preliminary Work Before Starting the Dozing

Sometimes preliminary work may reduce clearing costs. For example, before you start the dozing, rotten logs should usually be removed. Also, as part of the preliminary work, it is usually preferable to buck up the logs and large trees and to make stovewood of the best material. You can then use the bulldozer on smaller trees, brush, and the remaining "down" material.

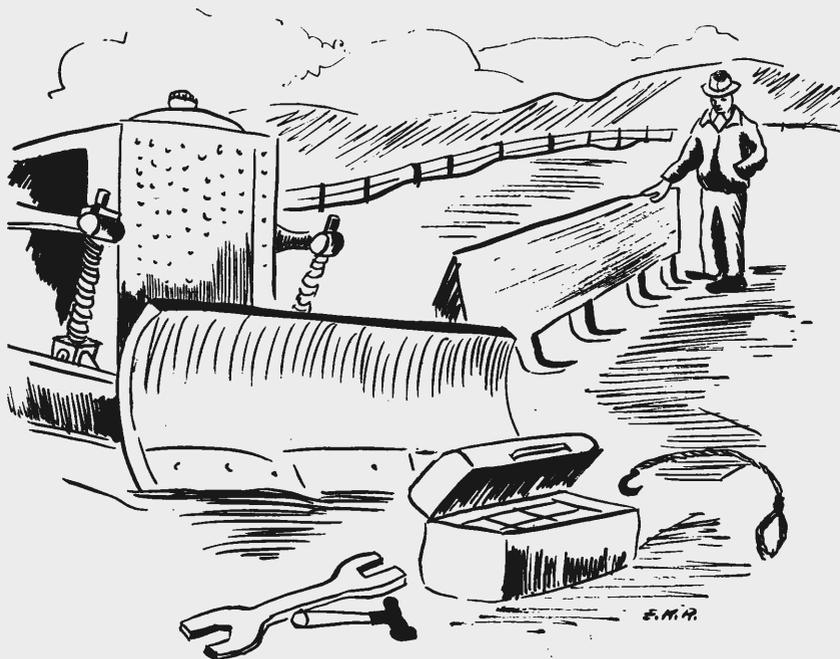


## Equipment for the Bulldozer

A bulldozer for land-clearing purposes should be equipped with a land-clearing blade, a leveling blade, a drag for leveling, tools for small repair jobs, chokers, hooks, a winch, and, in some cases, a large brush plow. The land-clearing blade generally has strong teeth set approximately 11 inches apart and adjustable to different lengths along the bottom of the blade. A winch on the back of the dozer is useful to move logs, pull out small stumps that are in places not easily reached by the dozer, and move the bulldozer if it becomes mired in a low spot.

## Splitting Tooth Is an Aid

A splitting tooth, attached to the side of the land-clearing blade, is often used to split cedar stumps and to open up stumps that have been cracked by explosives. It may also be useful for furnishing additional leverage to push over small trees.



**GOOD EQUIPMENT IS IMPORTANT**



**SAVE SLASHING  
COSTS BY PUSHING  
OUT TREES & BRUSH WHEREVER POSSIBLE**

## Use the Dozer Whenever Possible to Save the Cost of Hand Labor

Compared to the cost of slashing and piling by hand, bulldozing is the cheaper means of removing small trees and brush. Some farmers make substantial savings by removing small trees, brush, and stumps with the bulldozer in one operation. Often land may be completely cleared with a dozer at less expense than slashing costs alone.

### A Good Powder Man Will Speed the Job



SET EXPLOSIVE DEEP  
TO SAVE PICKING UP —

The proper use of explosives is important. It is best to use just enough explosive to shake and split the stumps, but not enough to mix the subsoil with the topsoil nor to make huge craters for the dozer to fill. Shallow shooting with a fast powder is likely to shatter the stumps, increasing the cost to pick up trash and fill holes. The amount of dynamite used in the "charge" and the depth at which the "charge" should be placed are determined by such conditions as the type of soil, the size and kind of stumps, and the depth of the water table. No inflexible rule can be given to guide the settler in the use of explosives.

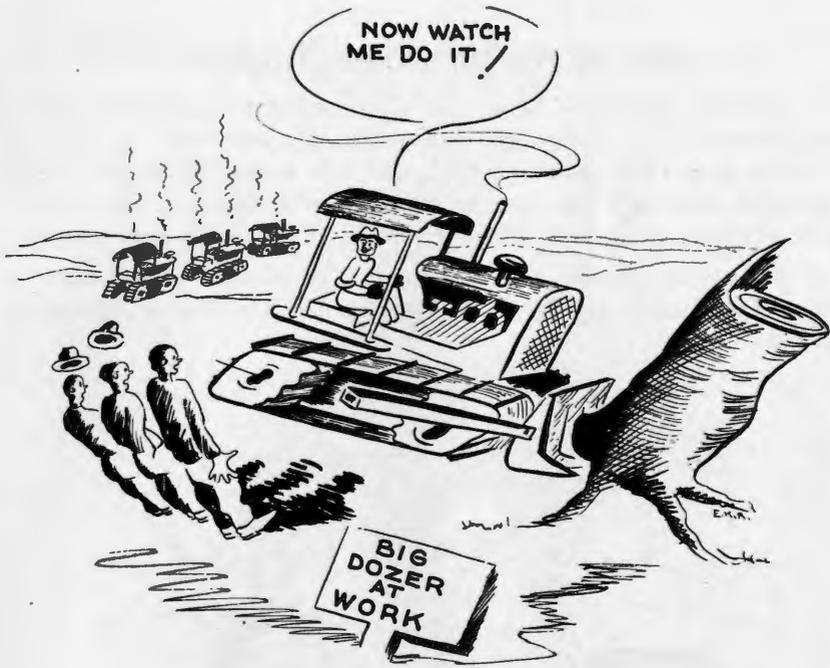
### Choose Your Dozer Operator Carefully

Farmers and contractors agree that it pays to get the best dozer operator available. Men who have had experience in logging and excavating with a dozer are not always efficient operators for land-clearing work. A good dozer operator, in using the machine to push the debris into piles, makes piles that are compact and free of earth. Such piles may be burned easily. On the other hand, the repiling of the logs, stumps, and brush is an expensive task and should be unnecessary.

### Small Dozers vs. Large Dozers

Small dozers, though often not satisfactory for the heavier work, are all right for some purposes in land-clearing operations. They may be used successfully for clearing small stumps, particularly if the earth is sandy. They are also handy for surface clearing and for repiling the debris during the burning operation.





### Large Dozers Are Recommended

Efficient bulldozer operators will ordinarily recommend the larger dozers. Some say that even the largest dozers now available are too small for most land-clearing work. Great power is required to push out the huge pieces of stumps and roots that remain after the stumps are cracked by explosives. Though the cost an hour is higher for large machines, the cost an acre is often lower, because less time is required. However, the large machines, weighing from 17 to 20 tons, sometimes are too heavy to move across small bridges.

Some efficient operators recommend a team consisting of a small and a large dozer. Because of additional costs, however, such a combination is but rarely used.

### Burn the Piles While Dozing Progresses

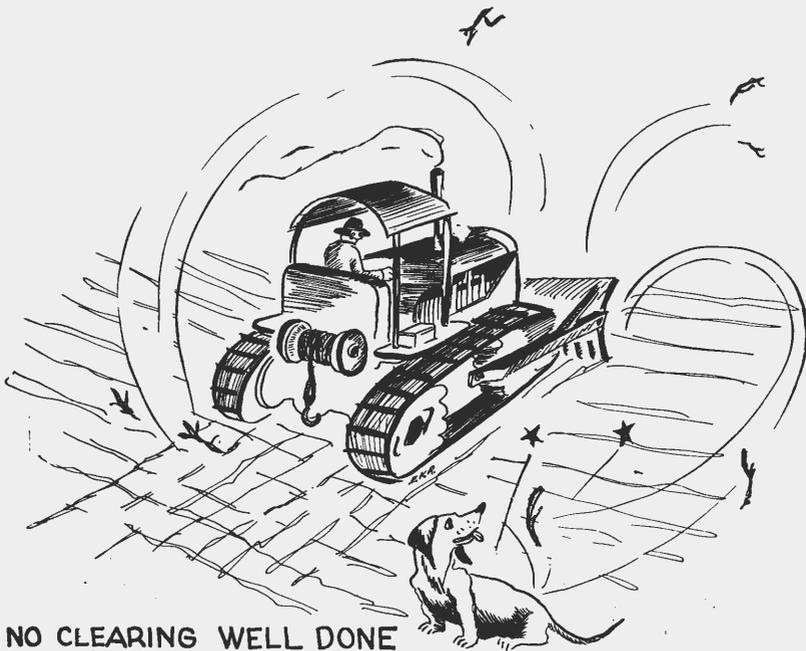
Stumps, roots, and brush can often be burned while the dozing progresses if the stumps are sufficiently dry and well cracked and if there is not too much green brush and leaves. With the use of the land-clearing blade, the debris may be pushed into large piles. The fire may be lighted, however, when the piling is first started.

Sometimes, before the burning can be done, it is necessary to allow the piles to dry for several weeks after the dozing operations are finished.



BURNING THE PILE WHILE DOZING

## Land-Clearing Blade Useful for Removing Stumps and Clearing Out Roots

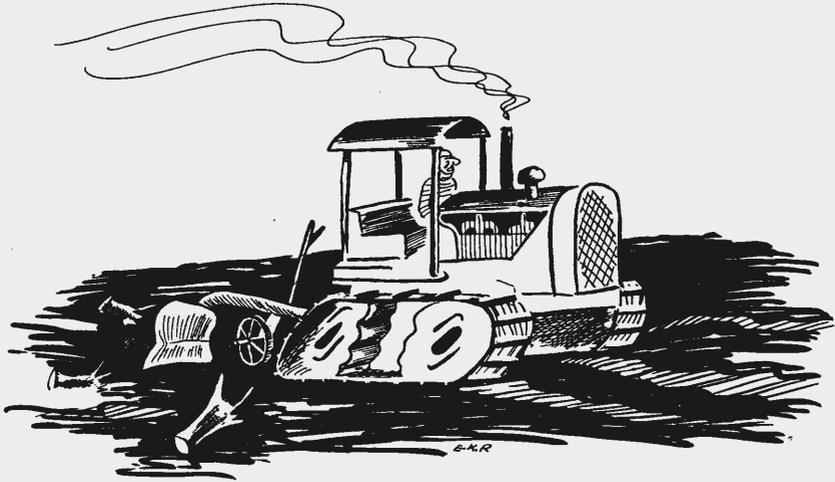


**NO CLEARING WELL DONE  
UNLESS COMBED BOTH WAYS**

The land-clearing blade, with adjustable teeth, is effective to remove stumps and comb out roots. When using the blade for heavy work, set the teeth from 8 to 12 inches below the blade. For combing out roots, drop the teeth to their full length, sometimes 24 inches or more. After a thorough job of combing, few roots or blind stumps will be left to interfere with future operations. The field should be combed in both directions and smoothed with the railroad iron or similar drag. Except for harrowing and packing, it will then ordinarily be ready for planting.

### Large Breaking Plow Sometimes Used

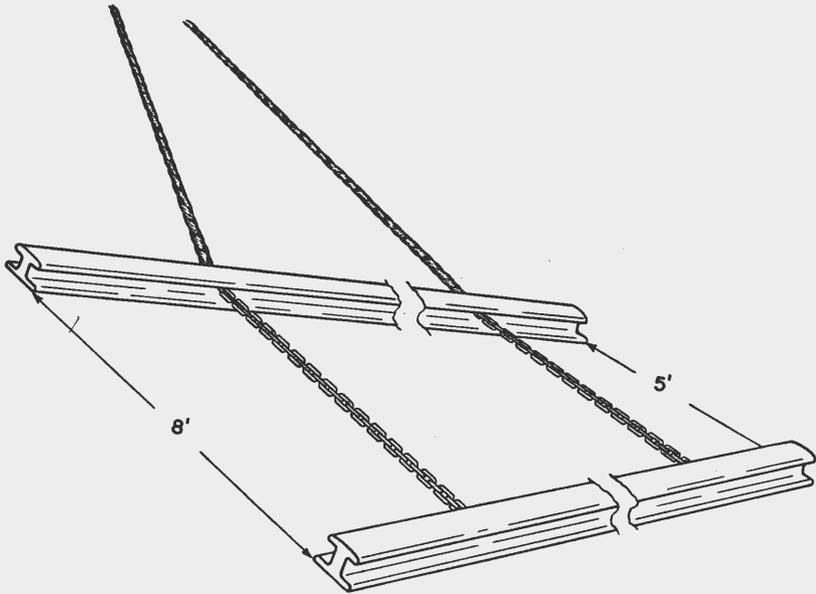
A large breaking plow, with a 24- to 36-inch share pulled by the bulldozer, is recommended for turning under small stumps, hazels, willows, blackberries and other types of brush and the humus that has accumulated over many years. This large plow reduces the labor of grubbing and picking up. A heavy roller is used to pack the land, which is then seeded and pastured for 2 or more years, during which time the wood material rots.



**BIG BRUSH PLOWS TURN UNDER  
BRUSH & SMALL TREES**

## Leveling Blade and Railroad Irons Are Handy Tools

In addition to the land-clearing blade, many operators recommend the use of the leveling blade and also of two railroad irons, set at angles to each other and pulled behind the tractor. After combing the land in both directions with the clearing blade and leveling it with the leveling blade, they use the railroad irons to complete the leveling. The land is then ready to be seeded; it does not require plowing or cultivating.



## Stoneboat

Efficient operators and farmers recommend that one or two men use a stoneboat to pickup and burn debris while the dozing is going on; otherwise, these fragments may be buried and may give trouble later. The stoneboat may be pulled by horses or by a small tractor, of either wheeled or crawler type. Some operators save time by burning the pieces of trash as they are picked up, sometimes using a stove that is made of an oil barrel with a  $\frac{5}{8}$  to  $\frac{3}{4}$  inch iron pipe grate.



**THE LOWLY STONE  
BOAT IS OFTEN  
GOOD EQUIPMENT**

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