

them. The extensive experience with weed eradication of the men on the ground has demonstrated that there are certain practical methods through which the weeds can be economically controlled. Weeds are not easily held in check, however, and methods which will control them therefore must be used systematically—that is, incorporated into the regular schedule of the yearly work with the land.

Dangerous Qualities in Certain Weeds

The most widespread and dangerous weeds on the Eastern Oregon dry farming lands are the tumbling mustard (commonly called the "Jim Hill" mustard), the Russian thistle, and the tar weed. The most harmful feature of the "Jim Hill" mustard and the Russian thistle is that when they are

disked with such a machine as the double action cutaway disk or the double action disk (sometimes called the Walla Walla weeder), or even the common disk. The first machine is the better, however, as it does thorough work in chopping down the stubble and in forming a first class seed bed in which all the weed seeds, together with shattered grain seeds, will germinate. Then, when these weeds have started, a second disking should be given before winter comes, destroying the entire crop. In the spring, if the ground is particularly foul, another crop of weeds will come on and these should be thoroughly destroyed with the disk. This disking in the spring will also help to bring on the germination of any further

is spraying with iron sulphate solution. The especial advantage of this spray is that it may be applied to destroy the mustard as it grows right in the grain crop. The spray will not injure the grain but will destroy all species of mustard. To use this spray effectively on grain fields, however, requires a weed spraying machine and a rather difficult operation and is not especially recommended. The other methods already named are the most desirable, as they all aim at cleaning the ground of the seeds which are the source of the weed crop.

Harrowing the young grain early in the spring is a practice quite widely followed at the present time in Eastern Oregon. In some cases the harrow is used shortly after the grain is sown in the fall, where the fall rains have caused a vigorous germination of weed seed. Harrowing after the grain is sown, whether done in the fall or in the spring after the grain is well advanced, is quite effective in destroying young weeds, provided it is done with judgment. It is quite easily possible to injure the young wheat with harrowing and thus do more harm than good, but where the young weeds are thick and not too far advanced in growth, where the soil crust is sufficiently mellow to work well with the harrow, and where the grain has been planted slightly more heavily to allow for harrowing, this practice is believed by most farmers to be a good one.

Decidedly one of the most desirable weed control methods is a band of sheep. Now that it has been demonstrated that alfalfa and field peas in rows can be successfully grown on the dry farming lands, a flock of sheep furnish one of the most profitable sources of the wheat farmer's revenue. Lambs can be grown and fattened on the alfalfa and field peas and the weeds. The salt bush, the young mustard, and even the Russian thistle and the tar weed, before they are too far advanced in growth are almost completely consumed by the sheep, and the animals thrive on them. Further, the sheep take the weeds from the fence rows and corners and from the steep, unplowed slopes, etc., turning them all into a profit. Every Eastern Oregon farmer should have some field peas and a band of sheep.

Last, and perhaps the most important weed eradication method of all in Eastern Oregon, is the proper cultivation of the summer fallow. Probably the practice of summer fallowing the grain land alternate years arose

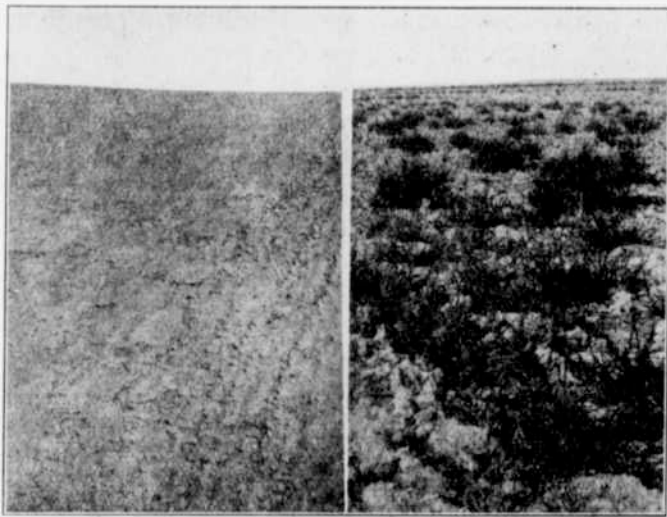
Letting the land lie idle every other year is altogether too costly a practice if every possible opportunity to destroy weeds and conserve moisture is not used. With the splendid weed killing machine which the Oregon dry farmer has now brought almost to perfection (the sliker or bar weeder), it is possible to keep the summer fallow clean of weeds and in fine condition at comparatively small expense. Aside from weed destruction, the main object sought after in cultivating the summer fallow is to avoid pulverizing the surface soil too finely. Careful handling will leave a cloddy mulch on the surface which will not run together and crust over so badly during the winter after the grain is sown.

Community Efforts.

To destroy the weeds on the individual farm is not enough in itself alone. One foul piece of land may furnish the source of weed infection to thousands of acres around it. Hence, not only the farmer himself but his neighbors or even an entire district must fight against the weeds in an organized way.

1. Roadsides must be cleaned of weeds annually. This may be done profitably by the land owner himself, either by mowing and burning the weeds or, better yet, by plowing the roadsides and keeping them cultivated clean of weeds. Some of the most progressive Eastern Oregon farmers are already following this practice with satisfaction. It should be possible to organize the sentiment in a progressive district so that this practice would be followed universally. If there are individual farmers in a community who would not fall in line, it would be possible to do the work under county supervision through a tax, the roadsides being taken care of on the same basis as the road itself is maintained. It might be possible for a county to own a weed sprayer and use the iron sulphate treatment on the roadside weeds. The efficiency of this method, however, would need to be thoroughly tested under Eastern Oregon conditions before it was undertaken on an extensive scale.

2. Where a farmer makes no effort to destroy weeds and his land becomes a source of infection to neighbors who are fighting the pests, it is possible to mits the road supervisor to enforce get action through the law, which per the extermination of certain weed pests where the landowner refuses to take action. The weeds which it is the duty of the road supervisor to re-



A Common Summer Fallow Contrast. Summer Fallow Offers the Best Opportunity for Destroying Weeds.

ripe the weed breaks off at the ground and then blows for miles over the open country. The seeds from these tumbling plants are shaken out only gradually, so that with every jump a few hundreds or thousands of seeds are scattered in a new place. When it is remembered that a full-grown normal mustard plant will bear an average of 1,500,000 seeds, it can be seen that this ability to travel, combined with an ample supply of ammunition, makes these wind-roving plants an effective enemy. Another feature of the mustard is the vitality of the seed, due to its oiliness and resistant seed coat. Mustard seeds will keep alive in the soil from ten to fifteen years; hence, when once scattered and plowed under, the soil becomes charged with them and every time it is replowed a certain amount of seed is brought close enough to the surface to germinate, perhaps many years after the seed has been turned under. All of these weeds are very heavy feeders upon the soil moisture and plant food supply, in this way directly reducing the crop yields. In addition, they greatly increase the difficulties and costs of harvesting.

Practical Method of Weed Control.

Successful and economical methods of control of these weeds on wheat lands are as follows:

Preventive on the Individual Farm.

In all waste places and along fence rows the weeds should be clipped and burned, preferably before they go to seed. In draws or the lee of hills, where they accumulate in the fall, they should be burned off.

Often these weeds will blow in large numbers on to a farmer's land up a certain draw or along a hill crest from the direction of the prevailing wind. In such cases, it is worth while to nail cleats on the fence posts and stretch a couple of light wires along the cleats so as to extend the height of the fence at those points where the weeds most commonly drift over. When the weeds pile up along this fence they may be burned off.

Care should be taken to sow only clean grain and other seeds. In other words, don't sow any weed seeds when seeding the land to crop. Use a fanning mill.

Remedial.

Following the harvesting of the grain, but not until after the first rains have come, the ground should be

seeds that may remain, which will in turn be destroyed with the plowing of the ground in April and May for summer fallowing. This treatment, if carried out as indicated, will not only get rid of weeds but is of the greatest benefit in aiding in the conservation of moisture, as the fall rains are quickly absorbed and the winter snows held. In addition, the stubble is broken down and incorporated with the soil so that decomposition sets in, humus is formed, and this becomes available for the use of the succeeding crops. On the other hand, the disking early in the spring is of distinct benefit in that it reopens the surface soil which has run together over winter, enabling it to absorb the spring rains and hold them. Further, it puts the ground in splendid shape for plowing, so that plowing is not only easier but the furrow slice when turned makes a good union with the soil underneath, aiding greatly in the conservation and use of moisture. In other words, aside from getting rid of the enormous tax on the land of these voracious weeds, the treatment is more than paid for by the good effects in moisture conservation and preparation for succeeding crops.

Another method of very great value on the dry farming lands for practically any class of weeds is to seed a part of the farm in single drill rows three feet apart. This alfalfa may be cultivated as much as desired, and at the end of the first year the field will be clean of all weeds. This alfalfa, of course, may be harvested for either hay or seed or used as pasture for sheep and hogs. For either purpose it will give a more profitable crop than wheat, provided the highly prized strains of alfalfa are grown. We especially recommend this crop for the dry farmer as a forage pasture crop, however. It may be plowed up at the end of four years and then seeded on another field until it is gradually moved over the entire farm. It will leave the land free of weeds and with a tremendously increased fertility for the production of grain crops. The fields of alfalfa grown this way in different parts of Eastern Oregon have proved successful and superior to the wheat crops.

Another effective treatment of this weed which may be used in conjunction with the methods already named, especially where the weeds are very bad,



A Profitable Way of Eradicating Weeds. Growing Alfalfa in Rows on a Gilliam County Wheat Farm.

partly at least from the necessity of destroying weeds. The summer fallow offers, of course, an almost ideal means of destroying weeds. It is unfortunate that while the practice of summer fallowing is almost universal on the dry farming lands, so few farmers take advantage of the ideal opportunity it offers for destroying weeds. Although the summer fallow is being a great deal better taken care of at present than it was six or eight years ago, yet a late plowed, uncultivated, weedy, summer fallow field is still a most common sight in Eastern Oregon.

move are the Russian thistle, the Canada thistle, the silver saltbush, the dagger cocklebur, and the tumbling mustard.

Until the organized effort of the community as well as the persistent effort of the individual farmer is given in following the general methods outlined above, the weed proposition will remain one of the most serious the Eastern Oregon farmer has to face and undoubtedly will steadily grow more menacing until a radically different type of farming will be required as the only way out.