Fallowing and soil conservation

J E. Watson
FALLOWING AND SOIL CONSERVATION

Soil Conservationists don’t always disapprove of fallowing, says Soil Conservation Service adviser J. E. Watson. They are prepared to compromise, and accept fallowing as a useful practice where it means better pasture establishment or more effective land reclamation.

Many farmers believe that soil conservationists condemn the practice of fallowing, but in fact there are circumstances in which we strongly recommend that land should be fallowed.

The best friend of the soil conservor is grass. It protects the surface soil from the direct force of the wind and rain, and its roots improve the structure of the soil and make it more resistant to erosion.

So it is natural that the soil conservationist thinks carefully about the practice of fallowing, which destroys the grass cover in midwinter and leaves the soil bare and exposed throughout spring, summer and autumn.

Obviously, land should not be fallowed unless it is really necessary.

The less time that the soil is left cultivated and bare, the less chance there is of it being damaged by a severe wind or rainstorm. Also, fallowing often means extra cultivation of the soil before it is cropped. From the soil conservation point of view each cultivation breaks up the soil and makes it finer and more liable to removal by wind or water. So we recommend the principle of minimum tillage—that is the least possible number of cultivations, consistent of course with satisfactory weed control, adequate seed bed preparation and a profitable crop.

Keeping in mind these general principles of minimum tillage and minimum period of exposure of bare soil there are times when we think fallow is necessary and likely to reduce the overall erosion hazard rather than increase it.

A.—CLEARING AND DEVELOPING NEW LIGHT LAND

The Departmental recommendation is that the native scrub should be knocked down by rolling, logging or chaining and the dead vegetation destroyed by fire in late summer. Disc ploughing four inches deep in winter will then give the good fallow required to prepare the new land for cropping the following year.

In the past many farmers have avoided this year of bare fallow of new land, either taking a short cut and trying to save a year, or perhaps believing that bare fallow created an erosion hazard and was therefore against soil conservation principles.

Taken on its own the year of bare fallow does make the soil more exposed to erosion, but we must consider the whole period of development until the land is thoroughly cleared and sown to pasture.

If the fallow year on new land is eliminated there are two main hazards.

• The crop may not yield well enough to even repay the cost of cultivating, seeding and harvesting.
• The stubble may not be thick enough to carry the fire which is necessary to kill the sucker regrowth of the crop year.

If the stubble will not burn it has to be ploughed in, thus reducing the chances of a paying crop in the second year.

Regrowth not brought under control in the first couple of years may require repeated ploughings and fallowing at a later stage, when it would be much more hazardous than in the initial year.

Worse than this, we have seen many areas where the regrowth has been allowed to get out of control. On these areas there is no pasture cover and lots of bare soil between the scattered suckers making a
severe hazard for both wind and water erosion.

Even if we escape these more serious consequences of the non-fallow short cut it will almost certainly take much longer to establish a satisfactory pasture cover, and surely, from a soil conservation point of view, the chief aim in developing new land is to quickly obtain a good pasture cover as part of a soil building rotation. To achieve this aim we are convinced that an initial period of bare fallow is essential on new light land.

This does not mean that we should not take care. On vulnerable soils priority should be given to doing each operation at the best time to reduce the chances of erosion. We suggest a procedure such as this:—

Knock down the scrub early in summer to give it plenty of time to dry out for a good burn.

Burn it as late as possible in the autumn, then fallow the soil as early as possible in winter. This reduces to a minimum the period when the soil is bare and smooth after the burn.

A good disc ploughing to a depth of four inches at slow speed will leave the surface rough and cloddy. In this condition the soil is receptive to rainfall and resists movement by wind.

On sloping land the ploughing should be done on the contour to further reduce the possibility of water run-off.

The fallow must not be worked back in the spring. It should not be cultivated again until after the first autumn rains the next year.

If this procedure is followed even the most hazardous soil types can be developed as recommended with little danger of serious erosion.

All farming practice is a compromise between various aims. In this case the conservation principle of minimum exposure of bare soil must be secondary to the thorough preparation and development of new land.

B.—RECLAIMING GULLIED SLOPES

Fallow is often recommended by soil conservationists when badly gullied or rilled slopes are being reclaimed. Such paddocks are usually poorly pastured and the loss of grazing caused by fallowing is not very great.

Filling the gullies and building the banks is best done when the soil is moist. If done straight after seeding the later winter rains will help to consolidate the loose soil in the banks and filled gullies.

However, these rains and summer storms could give the banks a severe test, with high run-off from the bare filled gullies and the poorly pastured land between the banks. For this reason the paddock should be fallowed immediately, in contour lands between the banks.

This should be a good working to four inches, with a tyned implement or a disc plough at slow speed, to leave contour working furrows with a large capacity for holding water. The fallow should be left rough and not worked back in the spring.

The contour fallow done in this way will reduce run-off to a minimum. The banks and filled gullies will have almost a full year to consolidate before the time of most erosion hazard—the period from seeding until the crop is about six inches high.

The fallow can be worked back immediately after the first winter rains and seeding done early. An early seeded crop on fallow should make quick growth and reduce the danger period.

To reduce the chance of stock damage to the newly constructed banks there should be little grazing during the fallow period. The banks will grass over quickly in the crop year and be well consolidated before stock graze the stubble after harvest.

No single practice is likely to be condemned outright by soil conservationists. It is only when such practices as fallow and burning are wrongly used for soil exploitation that the consequent loss of fertility and soil structure become serious erosion problems.
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