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L. McFadden, a hotel keeper of Reno, Nev., broke into his wife's apartments and in the presence of their two children shot and fatally wounded her and then committed suicide.

First Cousin of Lincoln Dead.  
Thomas J. Hanlan, first cousin of Abraham Lincoln, died at Bloomington, Ill. He was eighty-four years old.

# Home Course In Modern Agriculture

## IX.—Weeds and How to Combat Them

By C. V. GREGORY,  
Agricultural Division, Iowa State College

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IN attempting to produce large crops the farmer finds that he has many enemies working against him. Among the worst of these are weeds. One of the greatest problems that confront the farmer is that of keeping his crops free from these pests. After a field has been so handled and prepared that a large amount of plant food is in available form, with plenty of moisture to dissolve it, it is poor policy to allow weeds to seize this food and moisture and convert them into a worthless product.

Weeds may be divided into three general classes—annuals, biennials and perennials. Annual weeds are propagated entirely by seeds and live but one year. An exception to this is found in the winter annuals, which come up in the fall, live through the winter as small plants and produce seed the following spring.

Among the most troublesome annual weeds are the foxtails. These are grasslike plants that are too common to need any special description. The fact that makes them so difficult to

heads appear will not kill the plant, but if kept up throughout the season will prevent it from producing seed. In bad cases about the only remedy is to plow up the field and put it in to some cultivated crop. Where a regular rotation which includes the meadows and pastures is followed this weed can be readily kept in check. A point that must be carefully attended to in preventing the spread of this as well as of any other weed is to keep the roadsides and fence corners from raising weed seed enough each year to keep the entire farm seeded.

Another troublesome annual in some sections of the country is the Russian thistle, a form of tumbleweed. By rolling across the fields after it ripens it scatters its numerous seeds very widely. These weeds are usually not so plentiful but that they can be easily destroyed by pulling before they form seed. By doing this they may be kept from becoming thick enough to do any serious damage.

Biennial weeds live through the first winter and produce seed the second year of their life. They die as soon as the seed is ripe. The common bull and prairie thistle and burdock are conspicuous examples of this class of weeds. Biennials are not difficult to subdue. In cultivated fields they seldom live long enough to produce seed. They seed so late that they hardly ever ripen seed in meadows. In permanent pastures they may be controlled by cutting off below the surface of the ground just at the beginning of blossoming time. Sheep and goats will rid a pasture of these and all other troublesome weeds.

The hardest class of weeds to combat are the perennials. These do not depend entirely upon seed production to spread themselves, but are propagated by means of underground stems. These stems extend along beneath the surface of the ground, sending up stalks at short distances. They live in the soil from year to year, sending up fresh shoots every spring.

Some of the most common and troublesome perennials are the Canada thistle, morning glory, wild arctichoke, milkweed and quack grass. These weeds are found on all parts of the farm—in cultivated fields, in small grain and in meadows and pastures. The only way to kill them is to destroy the roots or starve them by preventing leaf growth. This is much more easily said than done. Where the weeds occur only in small patches the desired result may be accomplished by covering them with a thick layer of straw. In a dry season thorough cultivation will discourage them, though it will seldom exterminate them entirely. When the ground is wet cultivation will do more to spread perennial weeds than to kill them. The pieces of the underground stems which stick to the shovels will grow wherever they happen to fall and thus start a new center of trouble.

Of all the means of getting rid of perennial weeds that have been tried none is so effective as turning the field into a hog pasture. If the fields are fenced hog tight and the rotation includes the hog pasture the hogs will get a chance at all parts of the farm



FIG. XVIII—QUACK GRASS.

every four years or so. They are very fond of the roots and stems of perennial weeds, especially those of quack grass and morning glory, and they will continue to root until the last piece is brought to light and eaten. Where all the fields are not fenced hog tight a temporary pen may be used. This can be moved about over the patches of quack grass and morning glory until they are destroyed.

The weed problem is not nearly so difficult as many people believe. The remedy for weeds is good farming, and when good farming becomes the rule weeds will largely disappear. In a way weeds are more of a benefit than an injury. If it were not for them we would often be tempted to let the cornfield a few days longer before cultivating and thus fail to get as large a crop as we might otherwise have done. It is the cultivation that the presence of the weeds forces upon us that makes plant food available and prevents the escape of capillary moisture and so enables the plants to put their best efforts into producing a maximum yield.



FIG. XVII—A RUSSIAN THISTLE.

combat is their great seed producing capacity. It is not difficult to kill one formal plant, but no sooner is that done than another springs up to take its place.

Early fall plowing gets rid of many of these weeds by turning them under before the seed is ripe. Some of the seed which is ripe will grow up, and the plants will be killed by the first freezes of winter. If the field is harrowed early in the spring many of the remaining seed can be induced to start. The more weeds that come up at this time the better, since they will be killed in the subsequent preparation of the land for planting.

There is no better implement for killing weeds before corn comes up than the harrow. Harrowing is a cheap operation, since so many acres can be gone over in a day. The more times a cornfield can be gone over with the harrow before the corn comes up the better. In harrowing to kill weeds care should be taken not to do the work when the weather is cloudy or the ground too wet, or the weeds will be transplanted rather than killed. In regard to the value of harrowing growing corn opinions differ greatly. It is almost impossible, however, to harrow corn without destroying some of it. It is a waste of time to test the seed and planter with the idea of getting a good stand and then harrow part of it out. Unless the weeds are very bad the harrow had better be put away in the machine shed as soon as the corn begins to appear above the surface of the ground.

Thorough cultivation from the time the corn is two or three inches high until it is ready to "lay by" will do much to keep the weeds in check. The deep early cultivations will bring up the seeds that have been lying dormant at the bottom of the furrow slice. These will germinate and be killed by the later cultivations. Foxtail may grow up and go to seed after the crop gets too large to cultivate. It is often a good plan to sow rape in corn at the last cultivation. This will come up quickly and shade the ground so completely that it will prevent the growth of annual weeds almost entirely.

Annual weeds seldom do much damage in small grain. If the grain is drilled in on a properly prepared seed bed it will get such a start that most of the weeds will be smothered out and die for lack of plant food and light. One annual that is sometimes troublesome in grainfields is mustard. Since this weed is easily killed by cultivation it seldom goes to seed in cornfields. Consequently when small grain follows corn there is little mustard seed in the soil except that which is sown with the oats.

There is another annual, or rather winter annual, that is much harder to eradicate than those mentioned so far. This is squirreltail grass, so called because of its fuzzy heads. The seeds are very light and are attached to long beards, which cause them to be carried for considerable distances by the wind.

Squirreltail grass is not troublesome in cultivated fields, but often infests meadows and pastures to such an extent as to make them almost worthless. Mowing as soon as the

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