NON-TOXIC MANAGEMENT PRACTICES FOR WEEDS

Charles Walters describes important farm management practices concerning soil health and the identification and non-toxic treatment of weeds.
By Charles Walters

For now, it seems appropriate to walk through farm management practices worthy of consideration. How they fit soils in any area and how they dovetail with crop systems projections becomes all important for the grower who wants to minimize the hazards of weeds so that he does not have to depend on the obscene presence of herbicides to control them.

FALL TILLAGE

Fall tillage has to be considered *number one*. It is the first thing a farmer should want to do, yet every fall when the crop is harvested, that bad weather always seems to arrive. Often the fall work does not get done. The farmer is too busy harvesting and he can't get in there and do the tillage.

Moreover, most crops are harvested late because schoolbook technology has given us degenerated soils. We do not convert and use fertilizers, nitrogen and other fertility factors locked up in the soil to properly grow field-ripened crops. Proper fertility management would see to it that harvest can take place a month earlier and thus permit time for that fall work. That is when compaction could be best removed, when trash could be mulched in. That is also the time when pH modifiers could be applied. That is when lime and other nutrients could be used to influence the quality and character of the soil's pH, all in time to meld into the soil during fall and over winter.

It is this procedure that would make the soil come alive in spring and get the growing season underway so that crops can germinate a week or ten days earlier.

Fall tillage is an important key to weed management. It is certainly one way to diminish the chances for foxtail and grass type weeds. If fall tillage is used to put soil systems into ridges, those ridges will drain faster in spring. They will warm up a week to ten days earlier. They will have germinating capacity restored earlier and permit planting earlier so that the economic crop can get a head start on weeds.

Once the soil is conditioned, it won't be necessary to turn the soil so much in spring. Obviously, every time the soil is turned, more weed seeds already in the soil are exposed to sunlight and warmth and other influences that wake them out of dormancy. Soil bedded in the fall, with pH modified so that the structure does not permit crusting when spring rains arrive, will permit rain to soak in faster, bringing air behind it. Such a soil will warm faster and therefore

determine the hormone process that will take place. Good water and air entry into the soil will not likely set the stage for foxtail (image below), nut sedge, watergrass and other debilitating influences on the crop.

Anhydrous ammonia is almost an insurance policy for its proliferation. Foxtail grows in organic matter soil where there is a surplus of humic acid. Although pH adjustment has been front burner stuff so far, the topic has to surface in any discussion of the foxtail weed problem.

When the cash crop is germinated under these conditions, that is when your little pigweeds and lambsquarters, your broadleaf weeds — which require a good quality available phosphate — hand off their message. They say the phosphate conversion is good and the fertility release system is more than adequate to grow a high-yielding crop.
Such broadleafs are easy to manage. When they germinate and achieve growth of an inch or less, and you tickle the soil before you insert the seed, they are easily killed off. As a consequence, the hormone process gains the upper hand for four to six weeks, a time frame that permits the crops to grow big enough to be cultivated.

ORGANIC MATERIALS IN THE SOIL

Needless to say, the bio-grower has to depend on proper decay of organic materials in the soil. Root residue and crop stover are always present, and

these have a direct bearing on how prolific weeds might grow. This means farmers, one and all, must learn how to manage decay of organic matter better. As we incorporate it into the soil, preside over proper decay conditions by pH management and regulate the water either present or absent, we achieve plenty of air and good humid conditions that will allow organic material to decay properly and in the right direction to provide the steady supply of carbon dioxide necessary for a higher yield.

While adjustments are being made in the soil — soils are sometimes out of equilibrium for years — it is unrealistic to expect the situation will be corrected in a single season or a single month. We can speed the process with the application of properly composted manures. The point here is that there is a difference between quality of various composts, just as there is a difference between predigested manures and manures sheet composted in the soil itself. Readers of *Acres U.S.A.* in general, and those who have enjoyed the short book, *Pottenger's Cats*, will recall how that great scientist planted dwarf beans in beach sand at Monrovia, California, as part of an experiment. Cats had been raised on that beach sand. Some had been fed evaporated milk, others raw meat, still others meat that had been cooked to achieve near total enzyme-destroying potential and some had been fed on raw milk. Cats fed evaporated milk, cooked meat — dung going into the beach sand — produced a dilapidated, depressed crop of beans. Cats fed whole milk — their dung also going into the beach sand, produced a prolific and extended crop, the dwarf bean variety growing to the top of a six-foot-high cage. The quality of manures used in composting have a direct bearing on the performance of that compost.

Experience has taught all those who wish to see that the kind of compost Fletcher Sims of Canyon, Texas, introduces into the soil has many desirable fungal systems of bacteria and molds. These have the capacity to attack rhizome roots of quackgrass, Johnsongrass, and those type of roots so far under the top of the soil they cannot be reached with physical tools. Compost tells us that we have to set in motion an environment with antagonistic fungi that will attack the rhizomes when they are in a dormant phase as the season begins to close.

In late August and early September, the length of the day shortens. Everything starts to go into fall dormancy. If at that time we can apply a wholesome, properly composted material to the soil and have it working for thirty days before the soil freezes and becomes inactive, a lot of weed cleanup work takes place at that time. Compost will simply digest most of the dormant weed seeds, and in two or three years of this approach seeds are literally vacuumed up, like soil particles on the family room carpet.

The key is timing. When weeds go into dormancy, they are subject to decay. They can be turned into fresh humus, rather than a charge of gunpowder ready to explode. Quackgrass in particular responds to the compost treatment. With calcium-adjusted pH, compost will attack quackgrass roots and rot them out in

one season. The same principle operates with deep-rooted rhizomes, Johnsongrass and thistles.

Quackgrass, sometimes called couchgrass. Agropyron repens is shown here (A); its spikelets (B); the ligule (C); and florets (D). Decay systems are at fault when this weed appears.

The simplest way to start a biological weed control program, then, is to adjust the pH. This affects the intake of water and makes it possible to manage water. In the cornbelt, where rain often comes at the wrong time and where droughts frustrate the best of intentions, this management of water and its capillary return is front burner stuff. pH management directly relates to so many desirable things, there is justification for referring the reader to the several volumes of *The Albrecht Papers* for background insight.

SOIL MANAGEMENT

Each weed has a direct bearing on the track record of the farm. Each reflects back to what the farmer has done correctly or incorrectly over the years. Too often — in this age of super mechanization — we have large fields with soft spots and hard textured soils. The farmer moves across one then over the next area because he feels impelled to farm big fields with big machinery. All the low soil is too wet, and so a pass through sets the stage for wild oats or foxtail in corn, or fall panicum.

Some soils get the wrong treatment simply because they, not the weeds, are in the wrong place. It may be that the eco-farmer will have to redesign the shape of his fields, or plant in strips so that similar types of soils can be planted

at the same time, with due regard being given to the need for soils to dry out and warm up and drain properly. It might be better to wait a couple of weeks. A little delay is better than wet soil work which leaves no chance at all for a crop.

As far as weeds as related to insects, the great Professor Phil Callahan has given us a roadmap that cannot be ignored. He called it *Tuning In To Nature*, and in it he related how the energy in the infrared that is given off by a plant is the signal for insect invasion.

It stands to reason that a plant that is subclinically ill will give off a different wavelength than the one with balanced hormone and enzyme systems. That these signals match up with the signals of lower phylum plants is more than speculation.

While writing *An Acres U.S.A. Primer*, I often made field observations that supported Callahan. It became obvious that when farmers did certain things in the soil, the crop could endure the presence of insects because they seemed incapable of doing much damage. I didn't know how the mechanism worked, at least not before the release of *Tuning In To Nature*.

Weeds are going to tell about the nutritional supply, and they therefore rate as a worthy laboratory for making judgments about the soil's nutritional system. They can often reveal the nutrients that must be added to the foliage of the growing crop to react with the negative effects of stress. After all, all growing seasons have variable degrees of timing and stress. It is not only necessary to arrive with nutritional support in time, it is mandatory.

The many mansions in the house of weeds all have family histories. They tell more about gene splicing and DNA manipulation than all the journals of genetic engineering put together. And if we pay attention during class, weeds are our greatest teachers. To learn our lessons, we have only to get into the business of watching weeds grow.

Source: Weeds—Control Without Poison