The practice of weed control for an organic small grain operation involves seeking out effective methods to prevent the establishment of, control and/or reduce existing weed populations without the use of conventional methods such as herbicides or heavy tillage. Examples of alternative weed control methods that would be acceptable for an organic operation include preventive weed control during fallow, and light, in-crop tillage.

**Fallow Weed Control**

Weed control during in the fallow year is critical to ensure an acceptable level of weed control when it comes time to seed the crop. Our research focuses on the entire system utilizing crop rotation, cover crops, and the use of an undercutter. We also have studied increasing seeding rates and cross seeding to increase plant stands and competition from the grain crop.

An example of a three year rotation would be:

- **Year 1 -**
  - Fallow, with a legume cover crop is seeded to both suppress weeds, and fix nitrogen.
  - Cover crop is then mowed or rolled to form a mulch, and later undercut to sever the roots of the crop as well as any weeds that were not suppressed.
  - One rodweeding to control summer weeds.
- **Year 2**—Spring wheat is seeded.
In Crop Tillage

Controlling weeds through in-crop tillage is essentially the practice of uprooting, or burying weeds through mechanical means. The ultimate goal is to effectively control weeds with little or no damage to the crop, and with minimal disturbance to the soil. Shallow tillage will also reduce the risk of bringing seeds to the surface.

There are many different implements on the market that are capable of slicing roots, or throwing dirt to bury small weeds with great precision. Certain knives, L-shaped or crescent shaped hoes, and sweeps can target weeds as close as 1 to 3 inches from the crop row.

Typical in crop tillage implements include harrows, spring-tine cultivators, or rotary hoes. A recent study on organic dryland cropping systems conducted by OSU found the rotary hoe to be an effective implement for in-crop cultivation.

Due to the amount of precision needed for effective tillage of weeds, certain field and seed bed preparations should be considered. Variables such as seedbed shape will effect the ability to later target weed growth areas. A level seedbed will also aid in successful in crop tillage by improving tillage depth accuracy and uniformity.

In-crop tillage has been conducted without reduction of plant stands or yields in our trials. Setting up the tillage implement is important in determining how aggressively it is tilling. Also the speed of the tractor, and the stage of growth of the grain plants must be factored into the process. No in-crop tillage is recommended once a hollow stem has emerged on the grain plant.

In-crop tillage has the potential to eliminate up to 80% of the weeds in the seedbed when done accurately, and with the proper preparation.

References

