

Applying the Fundamentals of Weed Science in Vegetable Crops

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Weed management is based on the integrated use of all the tools available to weed managers – prevention, eradication, and control. Vegetable crops which tend to be more sensitive to weed competition than agronomic crops, have little or no tolerance for produce imperfections, and require a high level of weed control necessary for economical control. Unfortunately, vegetables tend to have few herbicides, and those few herbicides do not control all weeds. Therefore vegetable crops tend to have complex multifaceted weed management programs. How do the basic tools of weed management apply to vegetable crops?

Prevention involves stopping weeds from contaminating an area. The objective of prevention is to keep as few weeds as possible from replenishing the weed seedbank in the soil. Examples of prevention include:

- Not allowing weeds go to seed in or around the field
- Using clean crop seed
- Cleaning equipment before moving between fields

Eradication is the complete elimination of weeds from the field. It is very difficult to eradicate all weeds from a field, but it is necessary to eradicate certain species from a field such as field bindweed or yellow nutsedge. For example, it is not possible to produce strawberry in a field infested with field bindweed. If strawberry is to be grown in a field, then any field bindweed must be eradicated before time of planting. As with prevention, weed eradication requires careful planning and often times years of careful weed management to achieve.

Weed control utilizes cultural, physical and chemical tools to limit weed infestations and minimize weed competition. Cultural weed control tools include the use of preplant irrigation and shallow tillage to prepare a weed free “stale seedbed” for crops. Another cultural weed control tool is crop rotation. Crop rotation allows the use of different weed control tools in the various rotational crops which prevents one weed from becoming dominant as occurs with monocultures. Physical weed control involves tillage to uproot weeds, hand hoeing and hand pulling of weeds. Another example of physical weed control is the use of mulches to block light and prevent weed growth. Chemical weed control includes use of fumigants and herbicides.

Integrated weed management varies by crop, but involves the use of the most economically viable and efficacious combination of weed control tools necessary for profitable crop production.

References

Zimdahl, R.L. 2007. Fundamentals of Weed Science, 3rd Edition. Academic Press: 666 pages.