

Weed control in field vegetable production

Weed control, in field vegetable crops, is essential to retain yield and quality and prevent issues at harvesting. Effective weed control also prevents unwanted build-up of weed seed, in the soil seedbank, for future crops in the rotation. Integrating chemical and non-chemical options can help to prevent herbicide resistance and ensure existing chemistry can be effective for as long as possible.



Why control weeds?

- Weeds can lower your yields, controlling these can improve your profits.
- Weed seeds can have long-lasting impacts in soils and impact future crop rotations.
- During harvest weeds can 'contaminate' crops causing issues which lower yields lowering produce quality and increasing costs of post-harvest cleaning and sorting
- Weeds can act as hosts for pests and diseases impacting crop health and yields

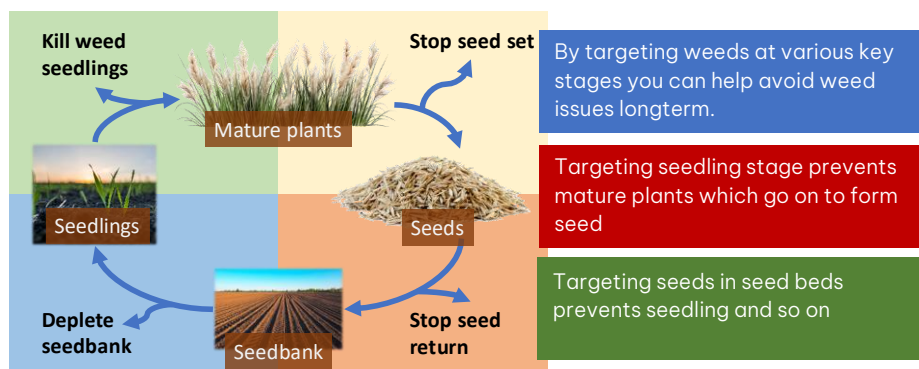
Top culprits and considerations

Common weeds of field vegetables include;



It can be important to consider weed types as annual and perennial weeds will require different control options entirely.

Varieties will vary with local soil types and rotations.



Three pillars of chemical weed control

Know your crops

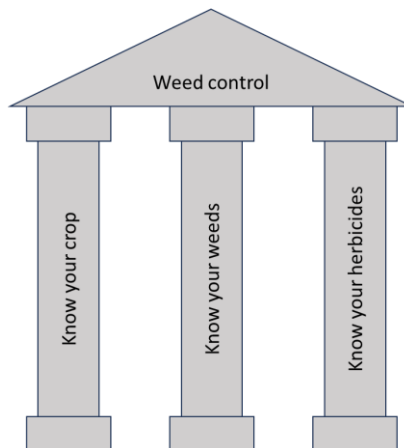
Different crops have different susceptibility to weed competition. Getting crops, that can produce a good canopy, into the ground in advance of weed growth, can help to control weed impacts. Look at manufacturer recommendations for planting densities, often this spaces crops densely to avoid weed competition.

Know your weeds

Weeds occur in natural cycles relating to species type and weed groups. Understanding the general calendar patterns of weeds can help you to plan.

Know your herbicides

Herbicides have different activities acting pre-planting, pre-emergence and post-emergence. They can be residual or contact and target different weed groups and crops. Working out what chemicals work for which crops and weeds can minimize the types purchased. Also consider evaluating the use of chemicals with 'extension of authorisation for minor use' **EAMUs** (see resources for more info)



Non-chemical weed control

When considering organic, low input and sustainable methods we want to move away from chemical input. Alternative controls can include the production of the following:

Stale seed beds - Generally, these involve clearing an area, allowing a flush of weed germination and then clearing the weeds to reduce the weed seed burden of the site in question. Weed free sites can also be achieved through combinations of covering ground, hoeing, and even heating to kill weeds on germination, or prevent them germinating successfully entirely.



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Cover crops - Cover crops can work well to avoid bare soils for weed establishment. These are often used in combination with strip tillage and common options include clovers and vetches. Some form of desiccation of the cover crop is required which can be mechanical or self-desiccation (in the case of vetches following the first frosts). Desiccated cover crop materials can be incorporated into soils and planted into, following tillage, or direct planting into desiccated cover crop material can be an effective strategy. **Tools like roller-crimpers can assist with this.**

Mulching - Mulching is giving a physical barrier between the soil and the environment, thus protecting from weed seed distribution and blocking light for weed germination and growth. Mulching films are more readily available as biodegradable options these days. Whilst these have the benefit of being more eco-friendly, they are single use, adding to your running costs each year. polypropylene mulches on the other hand can be reused multiple years. It's important that any organic mulches utilised are **PS100 standard** to ensure that they will not come with their own weed contamination issues. If you utilise your own organic mulch, ensure sufficient composting has occurred to make weed remnants and seeds less viable for re-occurrence. **Also important to avoid polluting soils with excessive nutrient levels!**

It can be worth considering local authority compost as this tends to be produced to a **tight PS100 regulatory criteria**. Other sources of organic mulch include woodchip waste from arboricultural practices such as by tree surgeons.



Robotic weeding

Several robotic weeding systems now exist that tend to work in one of two main ways;

- 1) Knowing the GPS co-ordinates of the crop and weeding anything outside of these.
- 2) Having cameras and sensors that can differentiate between the crop and weeds.

Robotic systems can allow for targeted spraying to reduce overuse of chemicals and only spray when weeds are present and can even incorporate non-chemical mechanical weeding systems, thermal or electrical weed control. These need economic scoping for your specific systems for viability of use.



Mechanical weeding

Traditional methodologies of mechanical weeding can support a strong weed control programme. Crop specific row width are an option with inter-row or across field cultivation via hoeing or tine cultivators to lift and disturb weeds.



Electrical weeding

Front mounted or back mounted boxes for addition to tractors, or other vehicles, or newer electrode designed systems. Both types can supply an electrical current through the plant to cause cell death and ultimate plant death. These can be a key option where strict herbicide restrictions are in place, with other benefits including;

- Faster than hand weeding
- Not disturbing soils like mechanical weeding
- Not killing non target pests only the pest under direct contact (reducing biodiversity impacts)

Useful resources

[Horticulture Farming Connect](#)

[Robotic weeder project Wales](#)

[Electrical weeding](#)

[AHDB horticulture \(including EAMUs\)](#)

