

Protected Cropping – Managing Soil and Crop

Crop rotation, - see "Protected Cropping example rotations guide" for example of multi-crop rotation

Rotations for protected crops follow different criteria to those outdoors, though the aim is the same. To avoid the build-up of soil disease, vary fertility demands and alternate crops of different rooting habits and vigour.

Consider the demands of your market, and how crops may follow each other to make efficient use of the space and avoid empty areas. Your rotation will evolve as market, experience and resources develop, but here are a few widely recognized strategies as follows.

- Follow demanding crops (e.g. tomatoes) requiring generous inputs with less demanding crops.
- Nitrogen hungry crops such as cucumbers and brassicas can be preceded or followed by legumes e.g. French beans or mange tout.
- Keep as long a gap as possible between members of the same family, in particular Solanaceae (tomato, pepper, aubergine) Cucurbitaceae (courgette, cucumber), brassicas and alliums.
- Consider growing a short-term green manure to precede a demanding crop; legumes are best grown as a summer or overwinter break.
- Record how your crops change through the season, most winter leaf crops run to seed through March and April, which leads neatly into the tender summer crops.

For more specialized systems rotating between for instance tomatoes and cucumbers can give some benefit to the soil and system, although most protected summer crops have a lot of diseases in common. Rotating within the family group (such as peppers and tomatoes) is unlikely to have a significant impact.

Cultivation/Tillage

A major advantage of protected cropping is having control over soil moisture allowing you to create the right soil conditions for cultivation. Maintaining some soil moisture, even in the hottest months, will also mitigate effects on climatic extremes on the soil and its inhabitants.

Work shallow to preserve the aerobic surface layer and reduce damage to soil life. Try to vary the depth of cultivation however, depending on the crop, to avoid creating a pan. Heavier soils may benefit from deeper cultivation to begin with and organic matter to improve structure and drainage.

Factsheet



Appropriate Machinery for different scales.

For larger structures with tractor access, the usual cultivation tools such as power harrows, rotivators and tines may be used.

For smaller systems the pedestrian rotivator is the standard tillage tool, though an alternative is the tiller (rotivator without wheels). This is more difficult to use, especially on hard soils, but once tamed is a more versatile tool able to cultivate into corners, close to posts and either very shallow or deep as required.

Small areas can also be managed no-dig but the higher demands on labour may limit this commercially. Large volumes of compost are required to maintain friable and fertile topsoils. This method can open up options for intercropping such as planting winter leafy veg under summer vine crops before they are removed.

Minimum tillage can also be practiced in rotation alternating a period of sensitive cultivation with no dig. This could employ the use of manual tools such as a wheel hoe, cultivation tines, buckfork and/or rake. In light soils this can be more efficient than you might think and can help with crop quality. Where perennial weeds or slugs are a problem regular tillage is recommended until under control.

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