

# Four Corners Organic Weed Symposium

## Crop Rotations for Weed Control



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# Crop Rotations for Weed Control

- Diversifying the cropping systems with crops of different lifecycles
- Different planting and harvest times discourage weed establishment and seed production

Help with other pest management issues

# Guidelines for weed control with crop rotations

Crop interaction with weeds varies with crop, weed species and environmental conditions, but in an area, any plant that captures resources first gains a competitive advantage over neighboring plants (Mortimer, 1984).

Variety selection – plant vigorous cultivars

Seeding rates – increase when possible to quickly shade weeds

Row spacing – decrease when possible to decrease areas where weeds can grow

Fertilizer placement – add fertilizers in-row rather than broadcast

Irrigation – use drip when possible to reduce wetted area

To reduce perennial weeds:

Include a short clean cultivated fallow period in rotation

- Helps deplete perennial roots & energy
- Cultivating forces perennials to re-sprout, depleting root carbohydrates
- Encourages annuals to germinate
  
- Follow weed prone crops (winter squash) with succession of short-season crops (spinach, lettuce)
- Combine practices – mulched vine crops reduce weed growth until full canopy cover
- Identify problem weed and areas and rotate between crops to out-compete problem weeds

Use cover crops as part of your rotation

Rotate vegetable families

Mustards – broccoli, cauliflower

Goosefoot – beets, chard, spinach

Parsley – carrots, celery, parsnip

Nightshade – tomatoes, peppers

Legumes – peas, beans

Cucurbits – cukes, melons, squash

Alliums – onions, garlic

Grasses – corn, grains

Composites - lettuce, sunflowers

Rotations reduce weed pressure by eliminating the constant niche that mono-cropping provides

- alternate crops by season of germination
- alternate annuals & perennials
- alternate dense crops (oats, rye) with open crops (row crops)



*Intensive vegetable rotational system:* This eight year rotational cycle can be adapted to many growing regions. Sweet corn followed by tubers followed by squash, followed by root crops then beans followed by tomatoes, followed by peas then Brassicas. This style has been most recently made popular by Eliot Coleman and is benefited by the following relationships.

**Potatoes** follow sweet corn...because research has shown corn to be one of the preceding crops that most benefit the yield of potatoes.

**Sweet Corn** follows the cabbage family because, in contrast to many other crops, corn shows no yield decline when following a crop of brassicas. Secondly, the cabbage family can be undersown to a leguminous green manure which, when turned under the following spring, provides the most ideal growing conditions for sweet corn.

**The Cabbage Family** follows peas because the pea crop is finished and the ground is cleared [early] allowing a vigorous green manure crop to be established.

**Peas** follow tomatoes because they need an early seedbed, and tomatoes can be undersown to a non-winter-hardy green manure crop that provides soil protection over winter with no decomposition and regrowth problems in the spring.

**Tomatoes** follow beans in the rotation because this places them 4 years away from their close cousin, the potato.

**Beans** follow root crops because they are not known to be subject to the detrimental effect that certain root crops such as carrots and beets may exert in the following year.

**Root Crops** follow squash (and potatoes) because those two are good "cleaning" crops (they can be kept weed-free relatively easily), thus there are fewer weeds to contend with in the root crops, which are among the most difficult to keep cleanly cultivated. Second, squash has been shown to be a beneficial preceding crop for roots.

**Squash** is grown after potatoes in order to have the two "cleaning" crops back to back prior to the root crops, thus reducing weed problems in the root crops

Questions?





Thank you!

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