Orchard floor management and weed control

Different ways of managing an orchard floor

- Complete cultivation
- Complete chemical control
- Herbicide strip
- Total cover crop

Complete cultivation

The orchard floor is cultivated on a regular basis to keep it free from weeds.

Advantages:

- It is not time and weather sensitive
- Large areas can be cultivated in a relative short period of time
- There is no risk of herbicide damage to the trees
- None to very little competition for water

Disadvantages:

- Mechanical damage to the roots and stems of trees occur
- No buildup of organic matter in the soil
- Weeds start to grow very quickly after rain or irrigation because the soil is disturbed with each cultivation
- Erosion happens easily after heavy rains when the top soil gets washed away

Complete chemical control

Herbicides are used to control weeds on 100% of the orchard floor

Advantages:

- No mechanical damage to the roots of trees
- The dead weeds suppress new weed growth
- A buildup of organic matter can occur over time
- Less soil erosion occurs when compared to complete soil cultivation

Disadvantages:

- The application of herbicides are very climate and wind sensitive
- Weeds can build up resistance against herbicides over time
- There is a risk of herbicide damage to the trees
- Herbicides can have a negative impact on the soil microbes and fungi

Complete chemical control: Herbicide damage

Herbicide strip

- The strip on the tree row gets sprayed with herbicides
- The vegetation between the rows is controlled by mowing

Advantages:

- Little chance of soil erosion
- Good buildup of soil organic matter
- Soil temperature is lower
- Good for mechanical harvesting

Disadvantages:

- Risk of herbicide damage to the trees
- Restriction on the type of irrigation system that can be used
- Competition by the cover crop for available water and nutrients
- Herbicides can still have a negative impact on the soil microbes and fungi

Total cover crop

Vegetation is grown on 100% of the orchard floor

Advantages:

- No chance of herbicide damage
- Good buildup of soil organic matter
- Good control against soil erosion
- Good water retention in the soil
- Good for mechanical harvesting

Disadvantages:

- Restricted on the type of irrigation system used
- Competition by the cover crop for available water and nutrients
- Increase in fire risk, especially if the grass is not mowed short on a regular basis

General considerations

- The irrigation system must be compatible with the orchard floor management practice
- Any vegetation will use water and fertilizer, make sure the irrigation system can deliver enough water for both the cover crop and the pecan trees
- Legumes as a cover crop will fix nitrogen (N) to the soil which can benefit the pecans
- Natural vegetation works well as a ground cover but should be kept short to minimize competition with the trees
- Grass cover between the tree rows increases the fire risk substantially
- Some plants produce hormones that inhibits the growth of other plants, this is called Allelopathy. Bermuda grass (kweek) is an example that will compete with young trees
- Air induction nozzles can reduce the risk of damage when spraying herbicides.
- All chemical suppliers should be AFCASA registered.
- Only use registered herbicides
- Pre emergence herbicides can also be applied, but must be selected with caution
- For an updated list of registered herbicides go to: http://sappa.za.org/crop-protection