

Growing Over Cover: Three Kansas Enterprises

November 16, 2017

Manhattan, KS

Long Pumpkin Patch

Roger Long
Great Bend, KS

- Corn Maze and pick your own pumpkins and squash;
- Established in 2007
- Total no-till
- Agri-tourism and education
- Open to public six weeks in mid-Sept. through Oct.



Cover crop: Cereal rye and hairy vetch



Equipment



Principles of Soil Quality demonstrated

- Keep the soil covered as much as possible;
- Disturb the soil as little as possible;
- Keep plants growing throughout the year to feed the soil;
- Diversify as much as possible using crop rotation and cover crops;

Pest control

- Smother crop of cereal rye;
- Herbicide;
- Integrated pest management with attention to pollinators

The rotation and timing

- Rye planted in early to mid-November;
- Rye is roller crimped and sprayed early May prior to bloom;
- Corn and squash fields are alternated;
- Corn and squash planted in late May through early June;
- Corn maze lanes mowed when corn is knee high.

The Crops









Broken Spoke Vineyard: Terry and Delores Turner Emporia, KS

- Established 2008 controlled weeds by mowing, spraying and cultivation.
- In 2010 established grass between rows;
- Incorporated other species into grass;
- Grazing added in 2011.



Multi-species cover benefits

Benefits:

- Water absorption and less irrigation;
- Mycorrhizal activity
- Elimination of herbicide;
- Elimination of purchased fertilizer
- Increased grape productivity and quality;
- Elimination of erosion

Diverse cover crop



Annual cover crops are broadcast into the perennial cover

- Rye, barley broadcast in the fall;
- Clovers, buckwheat and brassicas in spring;
- Sheep help incorporate seed in fall;
- Residue height is moderated by grazing.



Soil Aggregation and Organic Matter

SOM at 6.5%

Decreased irrigation

Diminished compaction

Increased microbial action



The Sheep

- Partnership with G&L Whole Food
- Weed control;
- Nutrient cycling;
- Added value to enterprise



Rotational grazing

- Sheep arrive in Spring and stay until grape set and netting;
- Come back after harvest;
- Three to four rows at a time leaving 2/3 of forage;
- Electrified netting for fencing.





The Crop

- Marketed to Glacier's Edge Winery in Topeka, and Crescent Moon Winery in Lawrence
- Varieties: La Crescent, Noiret, and Crimson Cabernet



Broken Spoke Vineyard

“I see Broken Spoke Vineyard as a large, integrated loop. In this loop, plant, animal, and microbial life, aided by soil and water quality, contribute to the overall health of the environment and therefore the development and quality of the intended crop.”

Conway's Produce, Paul Conway Leavenworth, KS

- Organic vegetable production since 1996
- Annual and perennial covers
- Light cultivation
- Rotation of strips and crops



Why cover crops?

- Replenish soil nutrients after vegetables;
- Break the disease and pest cycle;
- Build soil structure and add organic matter.



Strip method production

- Two out of seven acres in vegetable production.
- Remainder in perennial strips of either alfalfa or grass legume mix.
- Strips are 30' wide;
- Perennial strips rotated every two to three years.
- Function of perennials: build soil health, fertility, reduce compaction, provide area for transport, hay for neighbor in trade for manure.



Cover crops integrated with vegetables

- Cover crops used in production strips in cropping gaps;
- Purpose: maintain living roots in soil, organic matter, nutrient capture, erosion control, pest management.
- Rule of thumb: “One size does not fit all – be prepared to manage different fields differently”

Cool season covers

- Annual ryegrass, oats, buckwheat
- Legumes: chickling vetch, spring forage peas, and Lana Woolypod vetch
- Buckwheat after threat of frost: weed suppressor.
- “For sheer biomass, nothing beats a forage pea/oat mix.”



Summer Annual Covers

- Warm season grasses: Sorghum-sudan, millets
- Legumes: Iron and clay cowpea, Red Ripper cowpea.
- In mixes not more that 25% grass.



Fall Cover Crops

- Cereal Rye
- Austrian Winter Peas
- Hairy vetch
- Daikon radish (winter freeze out)
- Oats (winter freeze out)

Continuous vegetable production is hard on the soil. To buffer biologically active healthy soils are the key to growing good crops over the long run. Healthy soils are more resilient and can better tolerate periods of drought, and the erosion potential of hard rains and winds, and healthy plants are more resistant to disease and pests



