GEARING UP FOR SPECIALTY CROPS: EQUIPMENT NEEDS FOR SMALL TO LARGE OPERATIONS

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David Coltrain
620-330-3951
coltrainanddavid@gmail.com
Questions for Attendees
Specialty Crops Growing Experience
Types of Operations
Pre-plant, Soil Preparation
Planting and Growing
Harvest, Post Harvest (storage), Marketing
High Tunnel Specialized Equipment
Questions

- How many years have you been producing and marketing vegetables and fruits?

- Rate your experiences about equipment needs
  - 1 (very happy)  3 (okay)  5 (wish more info available)

- Do you enjoy finding equipment?
Over 20 years produced and marketed vegetables in SE Kansas with up to 60 acres (purchased equipment 2 times)

1994: Put up a High Tunnel
- Wow! This is great!

1999: Masters in Ag Economics
- Thesis included: “What is necessary for Kansas to produce more vegetables?”

2015 - 2016: Appointed by Gov. Brownback to Task Force on Local Foods

2015 - 2017: SCCC Agriculture Instructor and Specialty Crops Development (2 Greenhouses, 4 High Tunnels, 4-acre outside plots) (purchased equipment: all new, unlimited funds)

2018 -: Back home in SE KS (Cherryvale) (purchasing equipment)
Background

- Types of Specialty Crops
- Size of operation
- Vegetable Grower Specialty
- System approach (conventional, no-till, natural, organic)
- Importance of various enterprises
  - Important part of income
  - Addition to Farm Business
  - Supplemental income
  - Retirement income
- Character Traits
Specialty crops are defined as fruits and vegetables, tree nuts, dried fruits, and horticulture and nursery crops, including floriculture. Specialty crops are plants that are intensively cultivated.

- Labor vs. Equipment

- Vegetables (annual production)
- Small Fruits (perennial production, 4-10 years)
- Tree Fruits (perennial production, 5-20 years)
Small Acreage Grower
- Up to 4 acres

Medium Acreage Grower
- 3 – 15 acres

Large Acreage Grower
- 10 – 100 acres or more

High Tunnel
Vegetable Grower Specialty

- Local or Direct Market
- Wholesale market, small scale
- Wholesale market, large scale

- SCCC Demonstration Garden
  - Over 50 vegetable species, 15 fruit species
SCCC STEM Grant
Commodity Crops vs. Specialty Crops

- Less variety
- Economies of scale
- Example about two twins attending K-State
Operation Distinctions

- Pre-plant, soil preparation
- Planting and growing
- Harvest, post-harvest (storage), marketing
Tractors
- Minimum 20-40 hp
  - Josh, “Dad, why don’t we get a larger tractor?”
- # of tractors
  - Meier’s Farm (Topeka) in 1970’s
    - 13 tractors each hooked to a different implement
  - Medium and Large farms benefit from a larger tractor (70 hp)

Rototiller (rear tine)
- Europe called “tractors”

Trucks for harvest and/or marketing
Pre-plant, Soil Preparation
Major Tillage

- Chisel Plow
- Moldboard Plow
- Disk Plow
- Hire it done
Secondary Tillage

- Field Cultivator
- Disk
- Spring tooth
- Dust bowl consequences
- Backyard gardeners
- Destroys soil structure
- Potential for hardpan
- May have to rip soil
- Relatively expensive
- Try to avoid using a rototiller
No-till Operations

- No-till drill
- Crimper
- Cover crops can become weeds and weeds are decent cover crops
- Boom Sprayer
  - Economics: No-till trades herbicide use for tillage expense
In general, specialty crops need less fertilizer than commodity crops
- Soybeans, grass vs. broadleaf crops
- Small acreage farmers can use low cost methods
- Medium and large farmers have to use higher cost equipment
- Fertigation is possible
Irrigation

- Very important for high value crops
- Numerous ways to address
- Research shows that drip irrigation is most efficient and “standard”
Pest control

- IPM course listed 7 categories of pests and about 6 ways to control
- “High value crops spray for insects and diseases before unmarketable”

Weed control with pre-emergent herbicides
Back Pack Sprayers

- Cover large areas
- Small Acreage Grower can get a lot done
- Suggestion: multiple sprayers to cut down on cleanup time
Year End Clean-up
- Needed for clean up at year end
- Some crops more critical (corn, okra, weeds?)
- Mower can be decent weed control tool at times during growing season
Least favorite thing to do on our vegetable operation

Biodegradable plastic
Planting and Growing
Raised Bed, Drip Tape, Plastic Mulch

- Critical piece of equipment
- Learned about plastic mulch advantages around 1970
- First “plastic layer” homemade
- Wouldn’t try to raise specialty crops without this type of implement
Transplanters

- 20,000 plants/day
- Water wheel system
- Bare soil, “tobacco planter”
  - Good for strawberries, cabbage family, anything that doesn’t do better with plastic mulch
- Other types of transplanters
Low Cost Transplanting

- Hole punch
- Watering pipe
- One individual can transplant 1-2000 per day
- At SCCC only used transplanter if over 500 plants
Crops like corn, beans, peas, even pumpkins often planted with conventional type of planter
Precision Planter (Tiny Seeds)

- Salad crops: lettuce, brassica family, spinach,
- Root crops: radish, turnips, carrots, beets, etc.
- Many different types, all rather expensive
2 Row Lister

- Makes furrow to plant potatoes or other crops
- Produces raised bed for sweet potatoes
- Digs potatoes, sweet potatoes
Weed Control

- Separates “good managers from not so successful”
  - How many backyard gardeners mention they planted a garden, but the weeds took over
- IPM Class: 70% of labor in underdeveloped agriculture is to control weeds
- Have to plan for weed control
One Wide Row Cultivator

- Plastic mulch
- About 4 feet space to not tear up plastic mulch
"Ferguson" cultivators

Old equipment is disappearing, sometimes at auctions the winning bid goes for scrap metal
Row Cultivators

- Old, small tractors used for precise row cultivation
- Trips through Iowa in the past
- Liberal John Deere dealership
Garden Tools

Specialty Crops grower should be more knowledgeable and use more specialized equipment, but in many ways: “just a large garden”
Pesticide Application

- IPM approach
  - About 6 methods for pest (7) control
  - Try everything else, then use pesticides
  - High value crops, pesticides first thing
- Blaster sprayer
- Back pack sprayers
- Boom sprayers
Support systems for number of crops
  - Tomatoes, peppers, cucumbers, etc.

More supplies than equipment, but investment will add up
  - Example: Bramble trellis systems
Harvest, Post-harvest (storage), Marketing
Specialty Crops can produce a lot of product (40,000 pounds per acre)

Often harvested as immature perishable product

Have to be ready before harvest starts
- Medium and Large Growers
- Producers for Wholesale Market
  - Standardized boxes for specific crops
Coolbot Cooler System

- Insulated area, trailer
- Window air conditioner
- Coolbot system
Washing and Cooling for Small Acreage Growers

- Washer

- Hydrocooling and washing system
High Tunnel Equipment

- One or two person mulch layer with drip tape
- Specialized transplanter for plants grown in paper cells
High Tunnel Equipment

- Small human powered precision planters
- Broadfork
  - Great for planting onions on plastic
Salad Greens

- Harvester (likely 10 times as fast as hand harvest)
- Salad greens spinner to clean greens
- Innovative systems
Equipment and Budgeting

- Commodity vs Specialty Crops (twin brothers)
- Fixed Costs vs. Variable Costs
- Depreciation (accelerated depreciation, section 179)
- Technically, small items can be classified as annual costs under supplies
- Equipment vs. Labor Costs
Suppliers

- Morgan County Seeds
- Johhny’s Seeds
- Roeters Farm Equipment, Michigan
- Orschlein, Tractor Supply
- Farm Auctions
QUESTIONS

David Coltrain
620-330-3951
coltraindavid@gmail.com