

Small Farm Conference



How to Manage Cover Cropping for Small Producers

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Benefits of cover crops

- Erosion (wind and water)
- Soil organic matter
- Nutrient capture and recycling
- Nitrogen fixation (energy use)
- Soil water holding capacity
- Soil compaction
- Suppress weeds
- Increase Biodiversity
- Additional expenses



Potential challenges

- Timing of kill and land preparation (may delay planting)
- Incorporation (cover crop, equipment)
- Nitrogen tied-up and slow release (grasses)
- Weeds if poor stand
- Used up soil moisture
- Cool soil in spring
- May provide habitats for pests

Selection and mixtures

- Objective(s) and season
 - Nitrogen (legumes)
 - Nutrient capture/recycle (grasses, brassicas, others)
 - Organic matter (grasses)
 - Bio-fumigant (brassicas)
 - Erosion (all)
 - Weed suppression (grasses, legumes)
 - Etc.

Legumes (nitrogen fixers)

<ul style="list-style-type: none"> ■ Winter/early spring <ul style="list-style-type: none"> - Red/white clovers - Vetch ■ Summer <ul style="list-style-type: none"> - Peas - Sunn hemp - Beans - Lablab 	<ul style="list-style-type: none"> ■ Nitrogen fixing: <ul style="list-style-type: none"> - 50-250 lb/acre ■ Not good N-scavengers ■ Biomass: <ul style="list-style-type: none"> - 1 to 3 tons/acre ■ Erosion
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Winter: red clover



Winter: vetch



Summer: Sunn hemp



Summer: cowpea



Grasses (biomass, scavenge)

- Winter
 - Rye
 - Wheat
 - Barley
 - Others
 - Summer
 - Sorghum Sudan grass
 - Millet
- Good scavengers
 - Biomass:
 - 1 to 5 ton/acre
 - Weed suppression
 - Erosion

Winter: Rye



Winter: wheat



Summer: sorghum sudan



Summer: millet



Brassicas (soil health)

- Winter
 - Canola
 - Mustard
 - Radish
 - Turnip
 - Others
- Good scavengers
- Natural fumigants
- Hard pan
- Erosion

Brassicas: mustard



Brassicas: rape



Brassicas: radish



Mixtures



Field preparation

- Same as your cash crop, but could be less intensive
- Good seed-to-soil contact
- Disc-harrow and roller/cultipacker
- Soil moisture



Sowing

- Drill/drop vs rotary spreader
 - Different seed weight fly different distances



Crop stand

- Drill sowing vs rotary spreader



Residual nutrients

- Scavenging/recycling nutrient
- Fertilize for biomass



Growth and time to kill

- Any time, but optimal biomass at flowering



Kill

- Rolled/crimped with/without herbicide for conservational tillage
- Herbicides to complete weed control
- Slow release of nutrients



Kill

- Undercutting
- Knife cultivator



No-till planting

- No-till planter (coulters and shank)



No till planting

- Irrigation
- Slow growth

Shredding

- Speed up degradation and nutrient release
- Facilitate incorporation
- Flail mower (flat and bed shape)
- Rotary mower (short cover crops)
- Weed eater

Rotary mower (bushhog)

- Uneven
- Side drop

Row contour flail mower

- Potato/sweetpotato vine shredder

Flat flail mower

Incorporation

- With/without shredding
 - Spader
 - Plow
 - Disc harrow

Incorporation

- Rototill (shred and incorporate)
 - Biofumigation
 - Speed up decomposition and nutrient release

Rototill

Shred, incorporate (rototill), and plastic mulch

Plasticulture and nutrients



Shredding and plastic mulch



Subsequent cash crop

- Grasses (sorghum) tie-up nutrients
- Legumes promote growth



Questions?

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