

Hairy Vetch



Cover Crops that Improve Soil Health

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Buckwheat

Millet



Cover Crops and Veggies



- Trap/cycle nutrients & feed crops
- CC's stabilize soil – water/wind
- Suppress weeds
- Increase biological activity – Quick & Lasting

- Farm niche: fall-winter or spring-summer
- Grasses, broadleaf, or legume CC's

Grass Cover Crops

Species	Timing	N (lb/A)	Dry Matter (lb/A)	Nutrient Mop	Soil Builder	Erosion Fighter	Weed Checker	Quick Growth	Lasting Residue
Barley	Fall		2-10,000	4	4	5	4	4	5
Millet	Summer		2-7,000	5	4	5	5	5	4
Oat	Either		2-10,000	4	3	4	5	5	3
Rye	Fall		3-10,000	5	5	5	5	5	5
Wheat	Fall		3-8,000	4	4	4	4	4	4
Sorghum-Sudan	Summer		7-10,000	5	5	5	4	5	4

Total N – amount potentially supplied

N Mop – Ability to take up/store N

Soil Builder – OM adding/structure improver

Erosion Fighter – Soil holding ability

Weed Checker – Canopy density

Lasting Residue – Duration of residue

1 = poor; 5 = excellent

Broadleaf (other) Cover Crops

Species	Timing	N (lb/A)	Dry Matter (lb/A)	Nutrient Mop	Soil Builder	Erosion Fighter	Weed Checker	Quick Growth	Lasting Residue
Buckwheat	S	-	3-5,000	①	③	④	⑤	⑤	①
Mustard	F-S	30-100	3-9,000	③	④	④	④	④	②
Radish	F	50-150	4-7,000	④	④	④	④	⑤	②
Rape	F-S	40-150	2-5,000	④	③	④	④	④	③

Total N – amount potentially supplied
 N Mop – Ability to take up/store N
 Soil Builder – OM adding/structure improver
 Erosion Fighter – Soil holding ability
 Weed Checker – Canopy density
 Lasting Residue – Duration of residue

①=poor; ⑤=excellent

Legume Cover Crops

Species*	Timing	N (lb/A)	Dry Matter (lb/A)	Nutrient Mop	Soil Builder	Erosion Fighter	Weed Checker	Quick Growth	Lasting Residue
Field Pea	F	75-125	4-5,000	2	3	4	3	4	2
Vetch (#)	F	80-150	2-5,000	2	4	3	3	2	2
Red Clover	S	70-125	2-5,000	3	4	4	4	2	2
Wh. Clover♥	S	75-150	2-6,000	2	3	4	4	2	2
Alfalfa♥	S	75-150	3-6,000	2	4	4	5	3	2
Bean (#)	S	75-150	3-5,000	3	3	3	4	4	2
Cowpea	S	100-150	2-5,000	3	3	3	5	5	2

* Inoculate with appropriate rhizobium

♥ Perennial, persistent

Nutrient Cycling

Fall CC


Summer CC

- Vetch (legume)
- Wheat (grass)
- Kale; Radish (broadleaf)
- Beans (black, other)
- Millet; Sorghum
- Buckwheat
- Make or Re-cycle
- Timing for growth
- Make, Re-cycle or Release
- Fast/short cycle

Nutrient Management w/ CC's

- CC selection important – **establishment, grow quickly**
- Timing to local environment – **adapted, resource to grow**
- Integrated into farm production cycles – **good fit**

Horticulture



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October 2016

Horticulture/CoverCrops/2016-01

Introduction to Cover Crops for Vegetable Production in Utah

Tiffany Maughan, Research Associate, and *Dan Drost*, Extension Vegetable Specialist

The image shows a field of green cover crops, likely a legume, growing in a field. The crops are dense and cover the ground. In the background, there are trees and a fence.

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August 2020

Nutrient Management Strategies for Organic Vegetable Production

Emma Jones, Daniela Barrera, Jennifer Reeve, and Dan Drost

The image shows rows of bright green, leafy vegetables, possibly lettuce or spinach, growing in a field. The plants are arranged in neat rows with visible soil between them.

CC Fertility Strategies (options)

USU Student Organic Farm

1/2 Farmed each year;
Other 1/2 in CC's
More growth; better effect

April	May	June	July	August	September	October
Terminate Winter Wheat (WW) cover crop by June		Plant Buckwheat in late June and terminate by mid-Aug				Plant Hairy Vetch (HV) /Winter Wheat (WW) in early Sept after compost application
Terminate HV/WW 2 wks. before planting	Cool season vegetables: Staggered planting schedule depending on crop needs					Plant WW mid-Oct
Terminate HV/WW 2 wks. before planting	Warm season vegetables: Staggered planting schedule depending on crop needs					Plant WW mid-Oct

Whole Farm cropped
Staggered production
CC use strategy

April	May	June	July	August	September	October
Terminate WW 2 wks. before planting	Cool season vegetables: Staggered planting schedule				Plant HV/WW in early Sept after compost application	
Terminate HV/WW 2 wks. before planting	Warm season vegetables: Staggered planting schedule					Plant WW by mid Oct
Terminate WW 2 wks. before planting	Cool season vegetables: Staggered planting schedule				Plant HV/WW in early Sept after compost application	

CC's and Soil Stability

- NT or Strip Tillage
- CC & Erosion, Wind, Crusting

Winter Wheat



Cover Crops and Other Soil Effects

- ❖ Improved Soil Water
 - ❖ Rapid infiltration
- ❖ Reduced Soil Compaction
 - ❖ Carries traffic better
- ❖ Protect Beneficial Insects
 - ❖ Hiding sites
- ❖ Produce Disease Fighting Compounds
 - ❖ Allelopathy; nemadocides

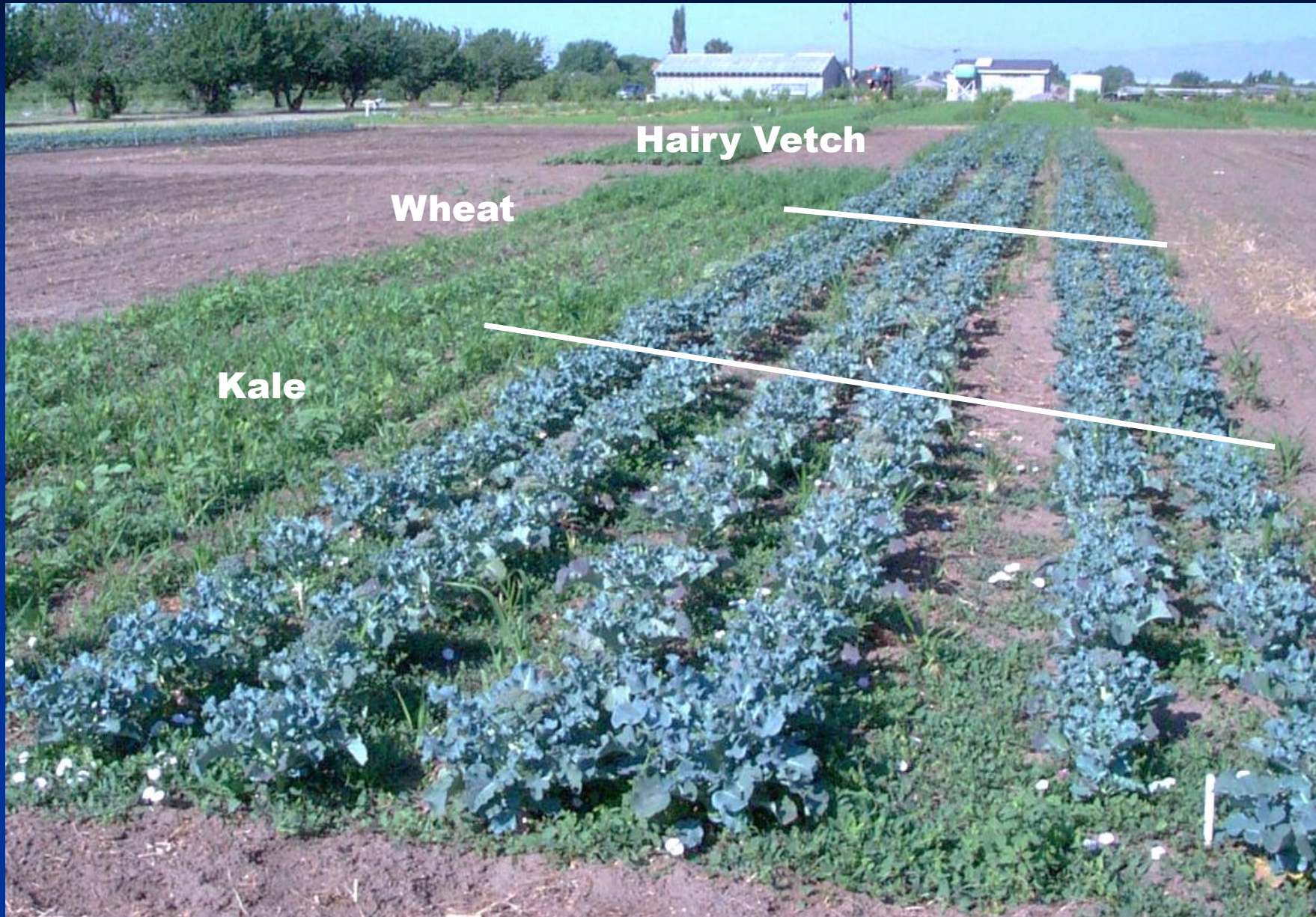


Cover Crops & Weeds

- Problem Periods
- Over-winter
- Summer fallow
- CC density
- Perennial problems
- Weeds & long-term influences/effects



Cover Crop Effects



Oct 30, 2018 (pictures)

Kale (5 Sept)



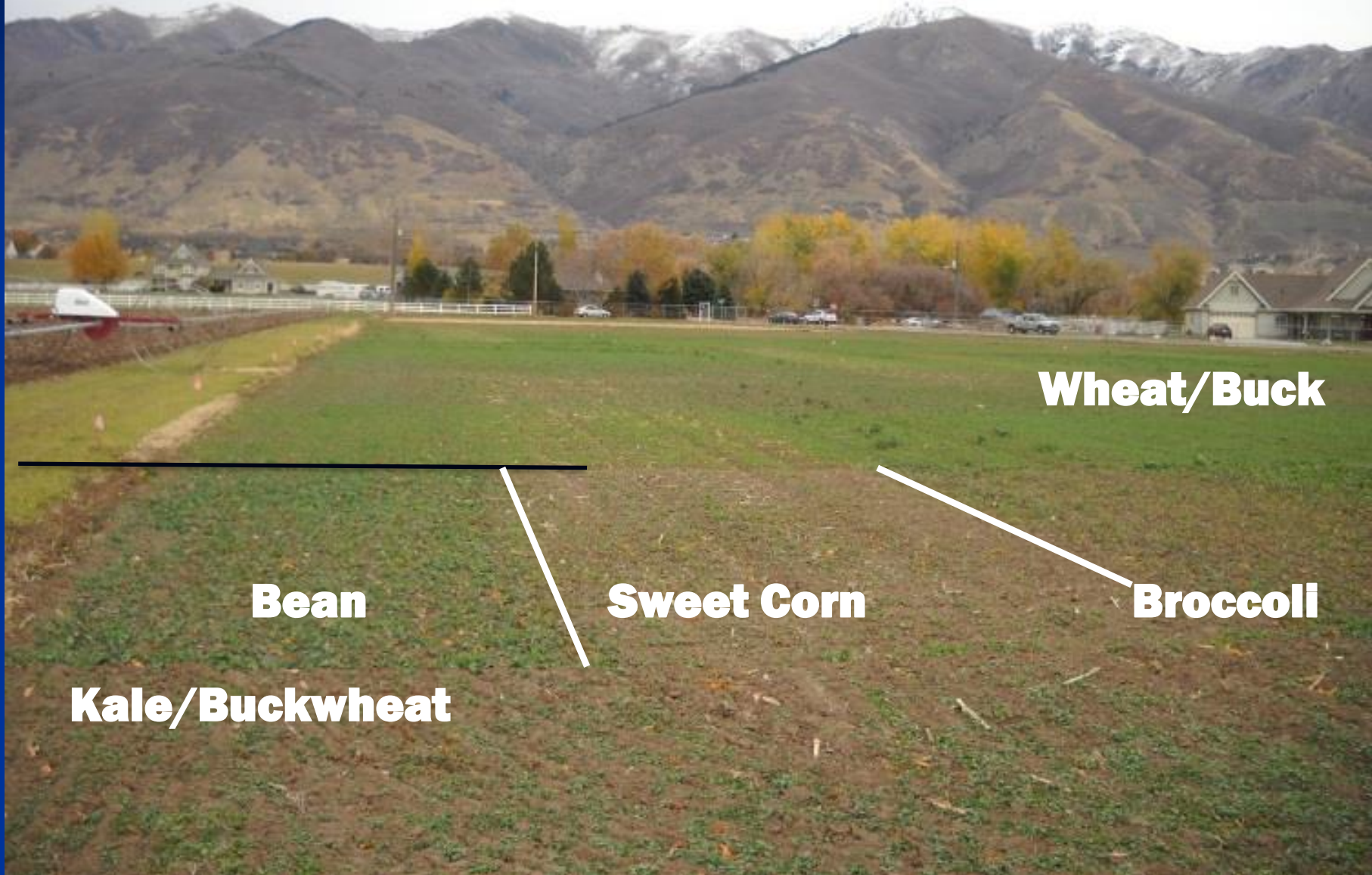
Winter Wheat (26 Sept) Hairy Vetch



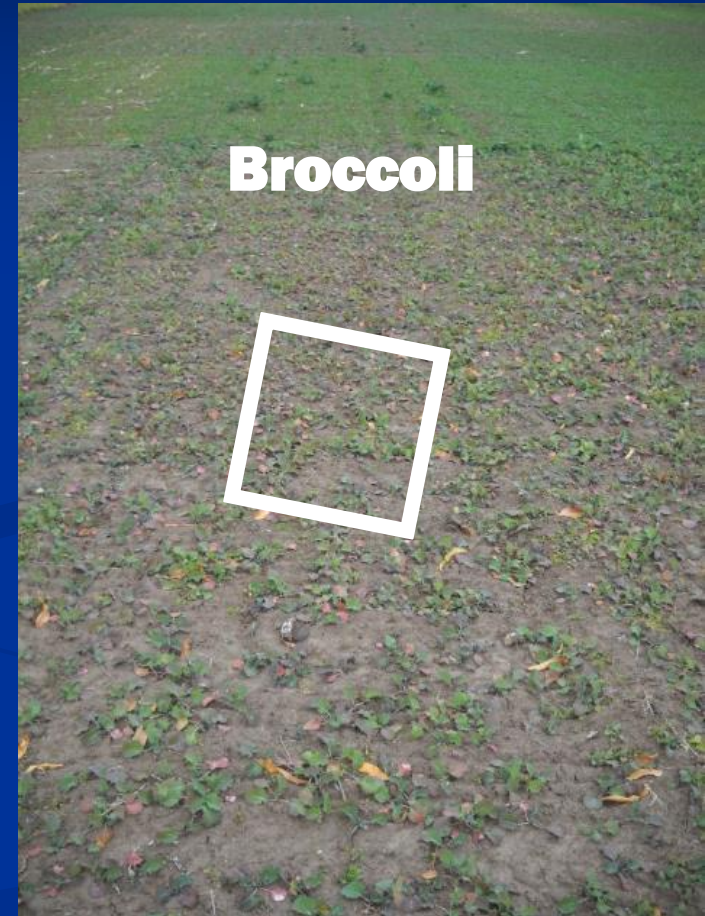
April 25, 2019



Crops (Veg/CC) and Re-Plant

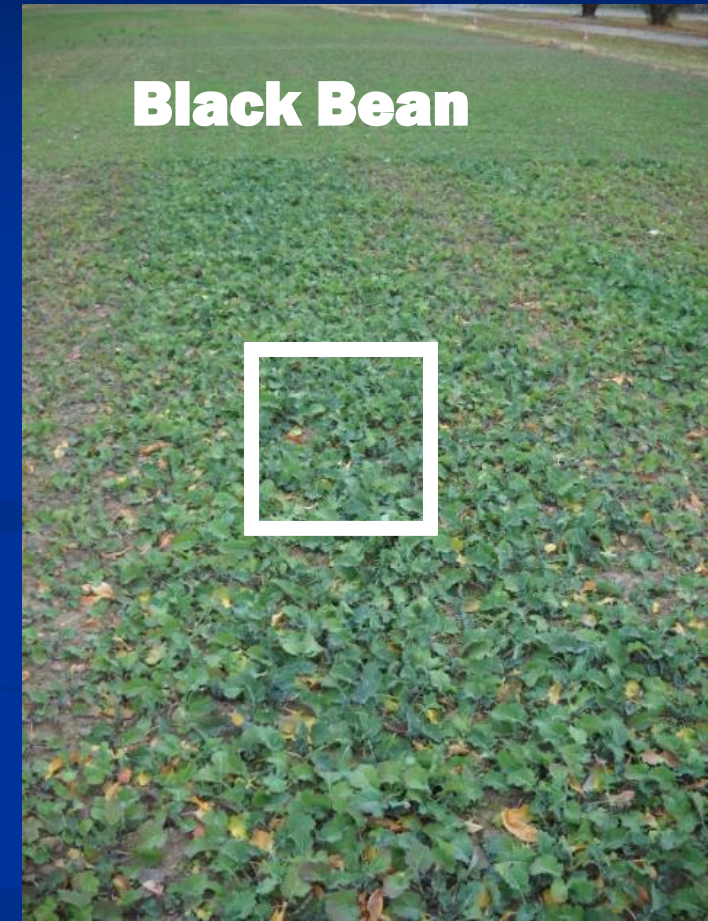
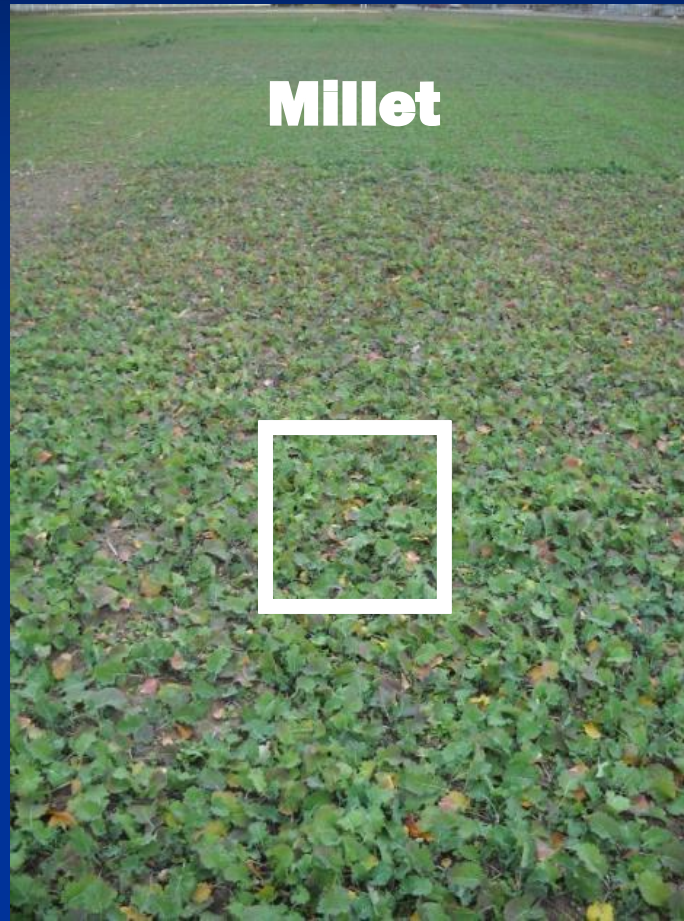
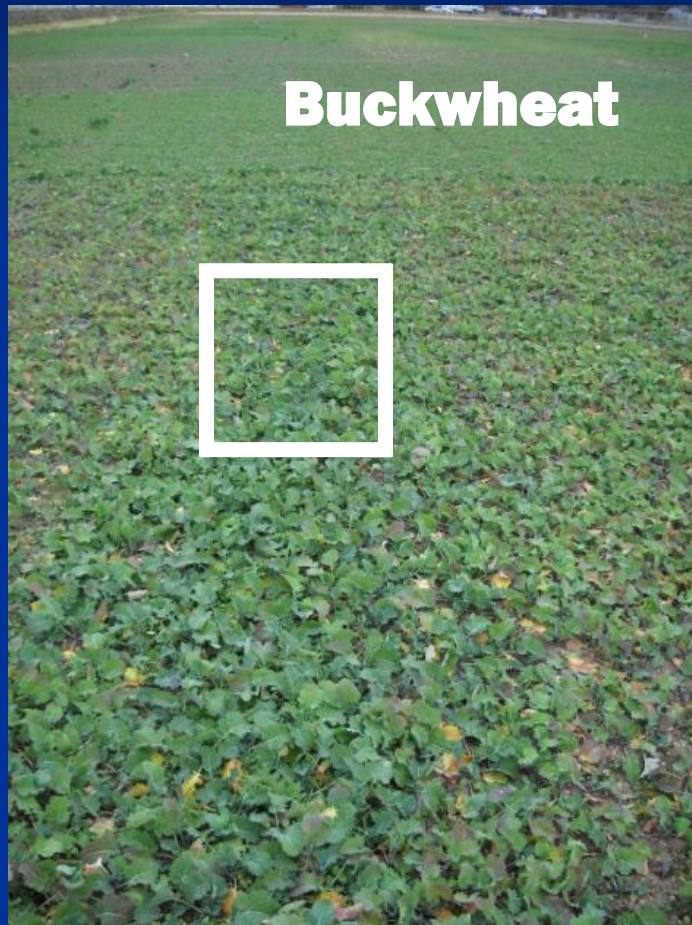


Veggie Residues & Fall CC's



Fall CC after summer Veggies; no diff in stands; growth less

Summer CC Effect on Fall CC,s



No difference in stands; No growth effect

Summary

- Winter/Summer CC's benefit the farm.
- CC's improve **Soil Nutrients**.
- Aid in **Weed Management**.
- Provide **Plant Protection**
- More details @

www.SARE.org/Cover-Crops

www.extension.usu.edu

