



OHIO STATE UNIVERSITY EXTENSION

Sustainable Crop Rotations with Brassica Cover Crops

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Type of Cover Crops

Legumes: Make Nitrogen, low C:N ratio
cowpeas, Austrian winter pea, hairy vetch,
red clover, soybeans

Grasses: Accumulate nutrients (fine roots), C:N
ratio depends on killing date: oats, cereal rye,
annual ryegrass, barley, wheat, Sorghum-Sudan

Brassicas: Good for surface compaction and weed
control: Daikon radish, turnips, kale, rape

Brassicas

- Fast growing, high in moisture, freeze out and die at 15⁰ Fahrenheit.
- Absorb 5-5.3% N if nitrogen is available.
- Release natural fumigants and natural weed suppressant chemicals as they decompose.
- Smell like propane, gas leak, or dirty diaper when they decompose at temperatures above 50⁰ F.





11.05.2008

Cover Crop Radishes

Disadvantages

- Should not be sown too early in the summer – potential reseeding
- May not be sown too late (need at least 6-7 weeks growth for *best* results)
- Hard seed will come up in spring
- Smell at spring thaw

Advantages

- Potentially deep penetrating large tuber
- Enhances soil percolation
- Usually reduces soil compaction
- Earthworm “Heaven”
- *Voracious* scavenger of nutrients
- Good for Grazing

Radish with winter pea



The Crescent-News

50 cents

Friday, February 5, 2010

Defiance, Ohio

UT coaches, players
are guest speakers at
ecumenical breakfast

Religion | A8



WAUSEON
EARNS SHARE
OF NWOAL TITLE

Sports | B1



WRESTLING SPOTLIGHT

First-year Defiance coach
talks about this
year and beyond

Railroad vital to NW Ohio economy

Grant would
finance repair to
run-down tracks

By BETHANY RAYLE
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It can be annoying to get stuck at a railroad crossing, especially if you're in a hurry, but those trains play a vital role in supporting area industry.

In 2007, more than 311 million tons and nearly seven million units of freight were transported on Ohio railroads with coal, iron, steel and grain topping the list of freight originating from the state.

"They're absolutely critical for northwest Ohio's economy," said Jerry Hayes, executive director of economic development of Defiance County. "We have a group of businesses in fairly heavy industry that rely on rail in this area."

"It is a highly important service to the elevators and farmers in our area," said Hayes. He added that locally the Jewell Grain Co. and Gerald Grain Center are two businesses that rely heavily on rail to ship grain.

According to Tony Langham,

• RAILROAD, Page A10



Jared Orzolek/C-N Photo

The odor given off by this field of oilseed radishes located along Ohio 66, north of Defiance, has caused several citizens to call emergency officials to report a suspected gas leak.

The field is located near two natural gas pipeline facilities near Banner School Road. The Tiffin Township Fire Department has responded to five calls about the odor in the last 45 days.



Photo courtesy of Bruce Cleveland/OSU Extension office

Here is a close-up view of oilseed radishes as harvested by the Ohio State University Extension office of Defiance County. The extension office is working with local farmers to research cover crops like the radish to naturally improve soil quality. One side effect of the crop is an odor that can be mistaken for the additive mixed with retail natural gas to signal leaks.

PEE YEW!

Foul odor north of Defiance
caused by oilseed radishes

By JARED ORZOLEK
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A pungent odor in the vicinity of a pair of natural gas facilities located north of Defiance isn't caused by a gas leak.

The odor, which has led the Tiffin Township Volunteer Fire Department to respond to five odor investigations in the last 45 days, is caused by a cover crop planted along Ohio 66, north of Banner School Road.

The crop of oilseed radishes is located near the

large TransCanada natural gas compression station and the smaller Panhandle Eastern exchange station.

Citizens have apparently smelled the decaying radish plants — planted to help retain nutrients in the soil — and have called authorities to report a suspected gas leak. The latest call came into the Defiance County Sheriff's Office 911 center on Tuesday.

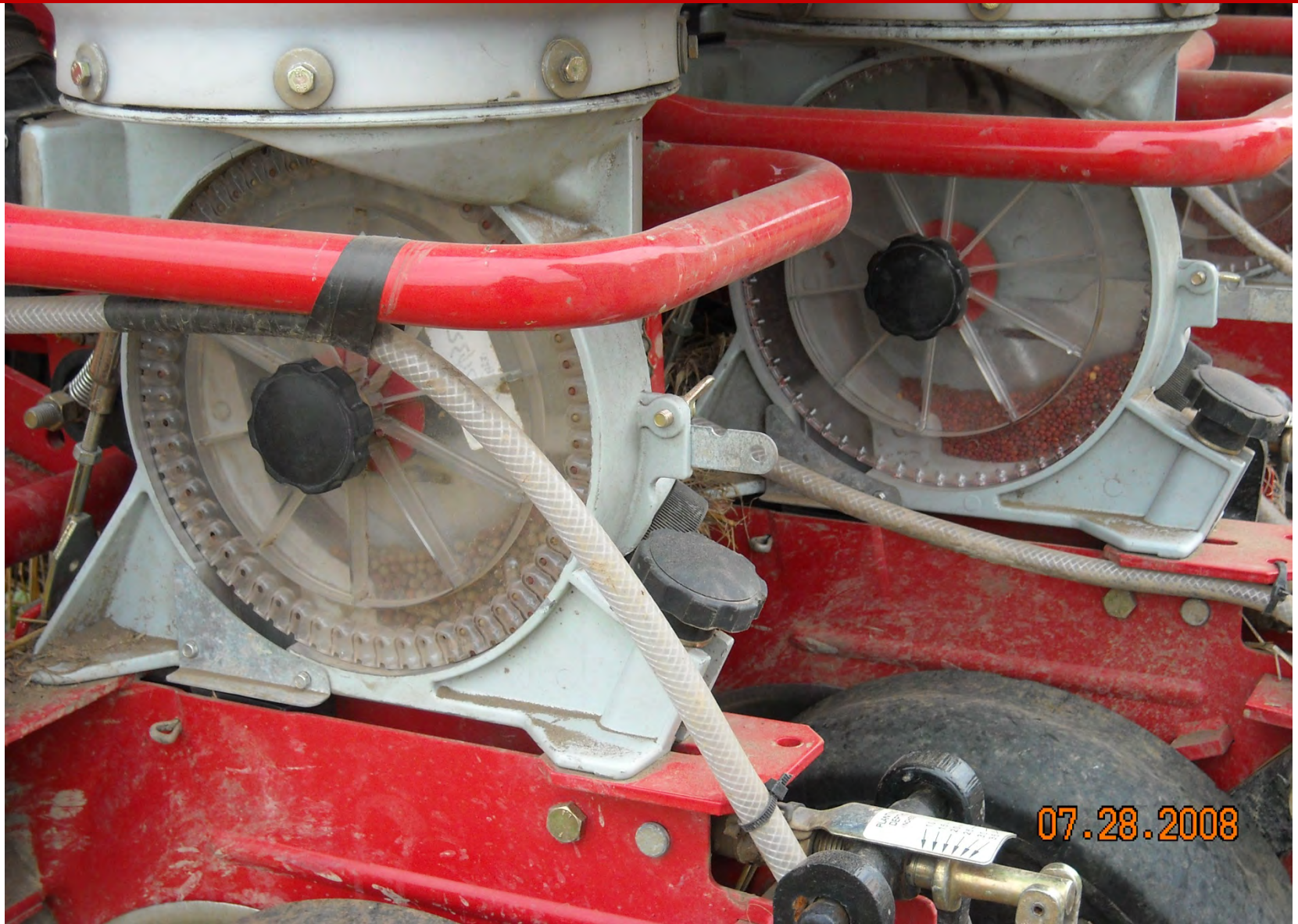
"It's manpower. Each time we go out there it's about an hour," said Tiffin Township Fire Chief Jamie

• ODOR, Page A10

Buehrer: 'If you're a
political junkie, this



OVI enforcement
Patrol out in



Austrian Peas & Radishes in different boxes
- planted @ the same time.

Radish & Winter Pea



10.11.2010

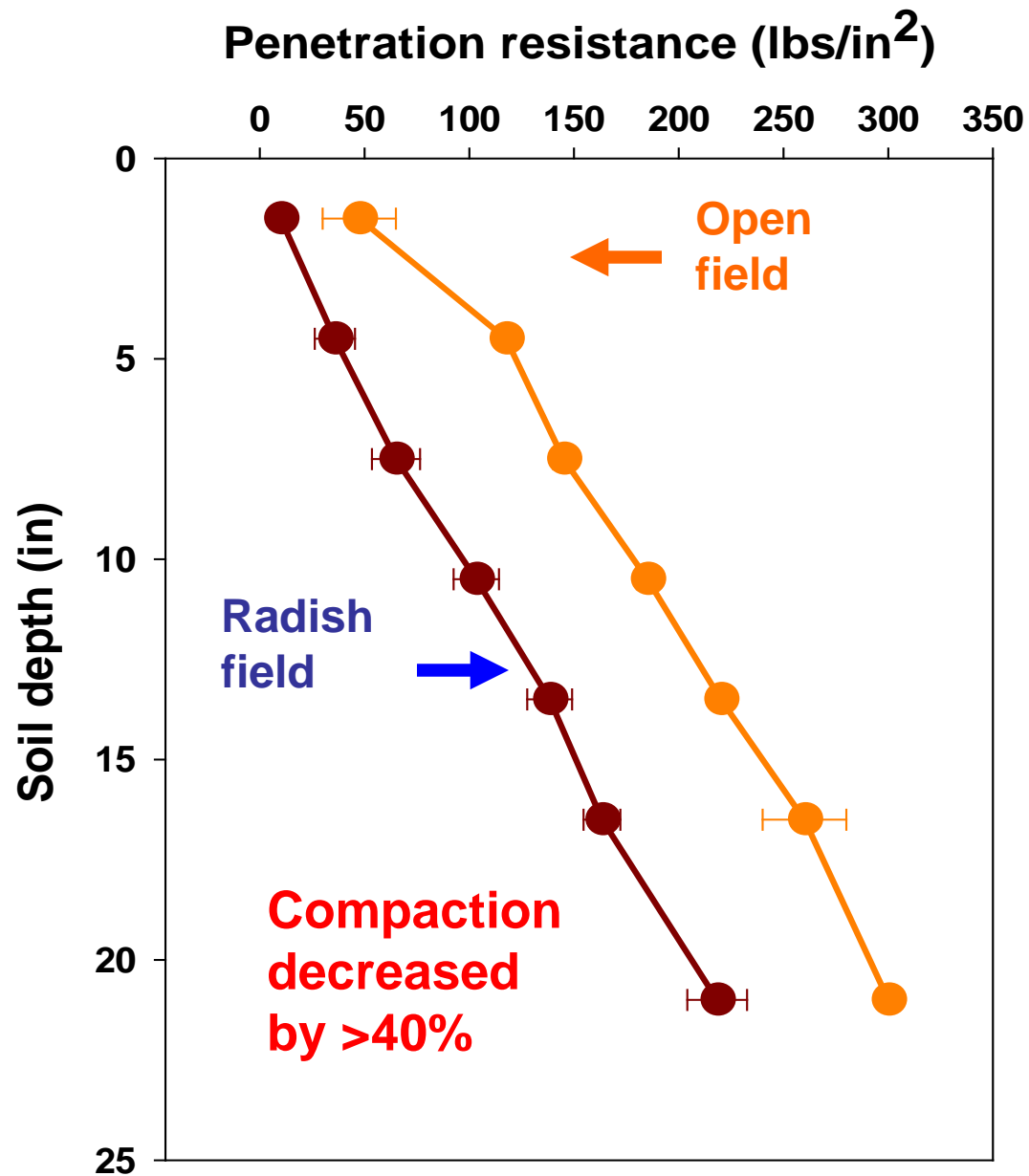


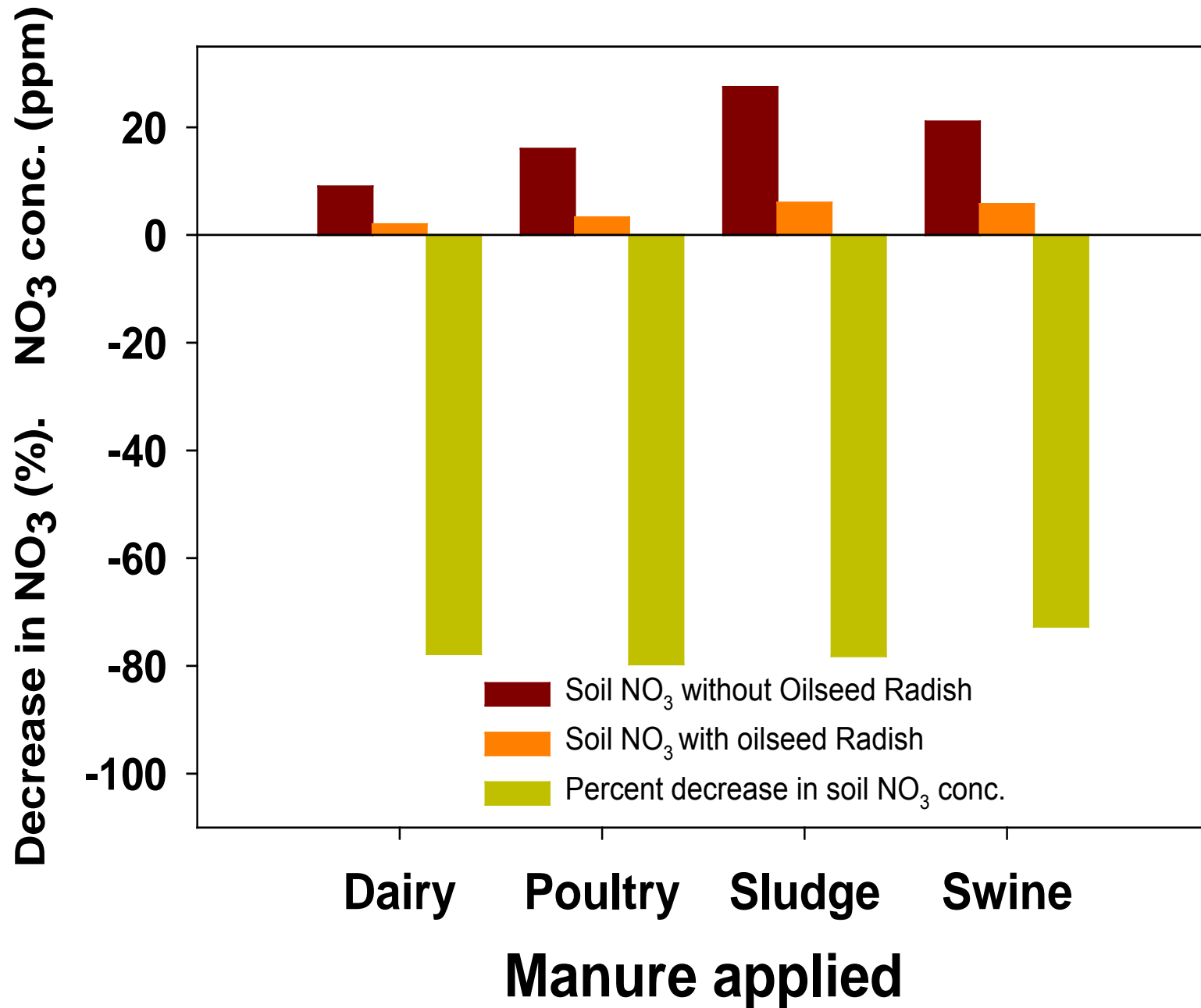
Daikon radish



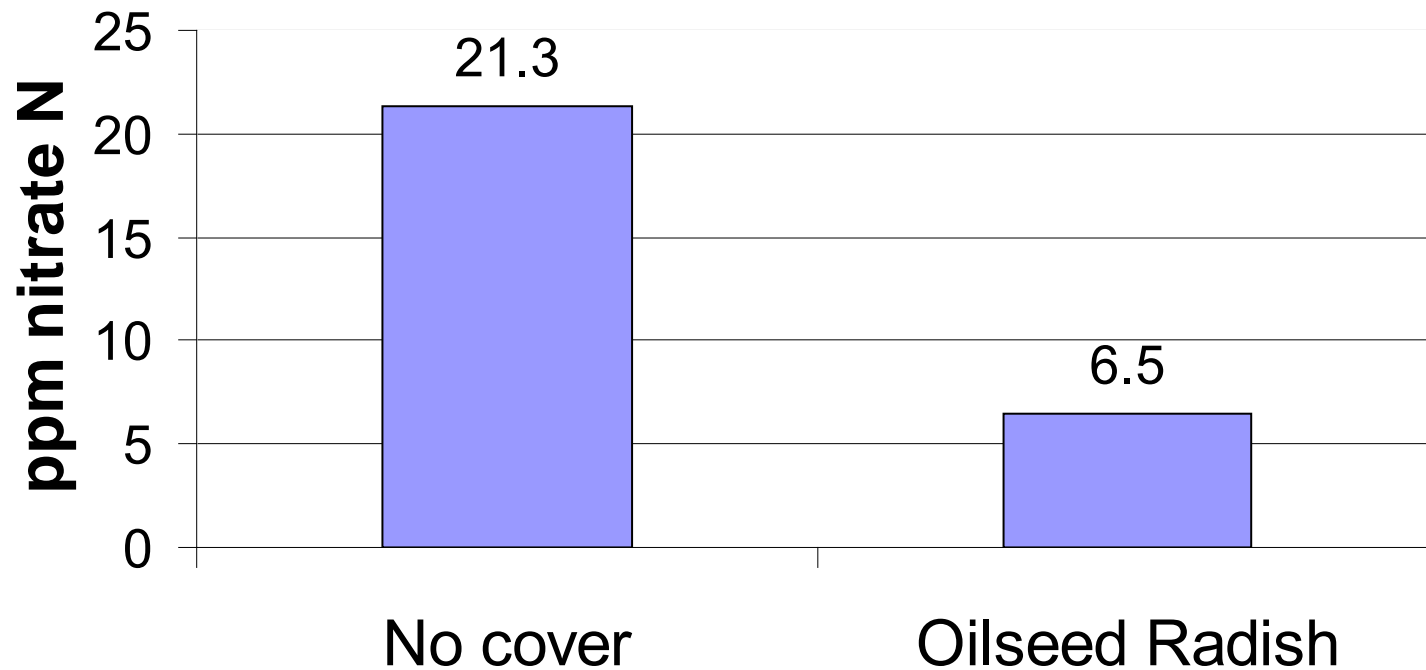
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Fall soil nitrate after manure application



Average of 24 tests, 7 field sites



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Recycling of nitrogen, phosphorus, and potassium by Oilseed radish

Nutrients	Concentration (%)	Content (lbs/a)
Nitrogen	1.89	650
Phosphorus	0.97	23
Potassium	3.27	230
Sulfur	0.81	60
Calcium	2.17	150
Magnesium	0.26	20

Radish & Winter Pea – Spring







Daikon Tillage Radish

Ground hog Radish

Seed Cost Matters

- There are “no good deals” on “Cheap” Seed...
- Especially not on ARG, Radishes, Turnips, Hairy Vetch, etc...
- VNS (often times) \neq Very Nice Seed!



No good deals on cheap seed...



Farmer “saved” 5¢/# on cheap seed {50¢/acre} (left) and now has a “disaster” on his hands!
Good radishes on right cost a bit more but have the tubers farmers want.

Dave Robinson slide

Other Brassicas

- Kale: Drilled 3-5#/A 0.25 to 0.75 inches
Broadcast 4-6#/A
- Rape or Canola (Dwarf Essex)
Drilled 3-5#/A 0.25 to 0.75 inches
Broadcast 4-6#/A



Rape/Kale

Rape Seed or Dwarf
Essex

Drilled 2-5 #/A

Broadcast 3-6#/A

Fibrous root system

15-25% CP for Forage

Good Forage

Needs to be planted
earlier than Kale

Kale Seed

Drilled 3-5#/A

Broadcast 4-6#/A

Cold tolerant

Reaches 25 inches tall

Grazed until December-
January

Good for wildlife

Kale



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Rape (Dwarf Essex)



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SUMMARY

- Brassicas (radish, kale, rape) grow quickly and recycle nutrients & reduce compaction.
- Only buy the Daikon radish and do not buy VNS (Variety Not Specified) radish.
- Radish will die in the winter and may smell bad when they decompose. Kale and rape should survive the winter.
- Cover crops need 60-90 days of fall growth to survive winter. Plant early maturing crops or plant early to maximize cover crop growth.



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