Alternative technologies for timely cover crop establishment

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What is innovation??

vs

Wednesday, March 23, 2005 11:51 AM CST

Nitrogen use down, yields up

By Tim Hoskins, Iowa Farmer Today

Wednesday, March 23, 2005 11:51 AM CST

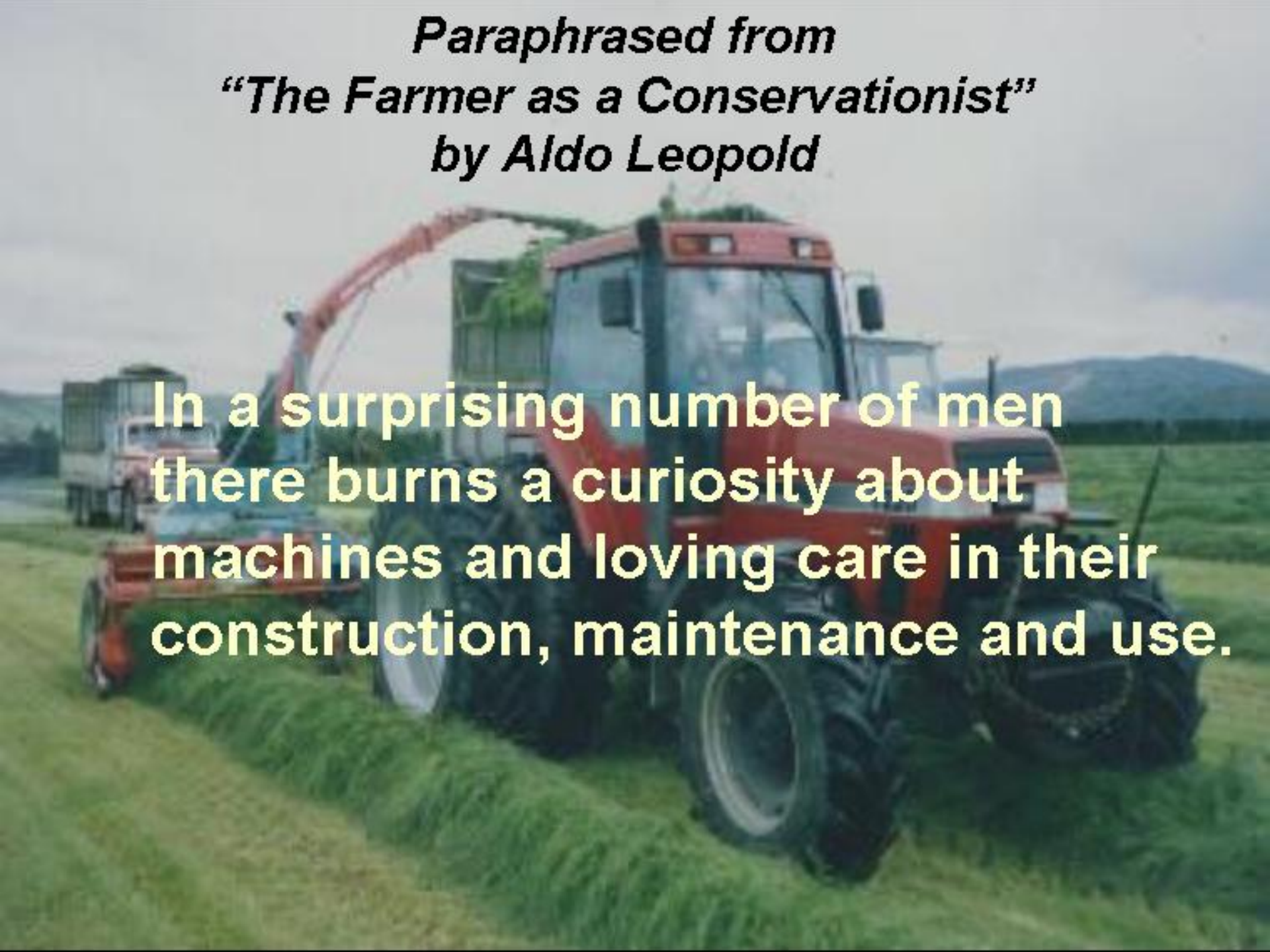
STOCKTON — Keith Schlapkohl concedes he doesn't know everything about farming.

That hasn't stopped him from trying new things on his Scott County farm.

"It seems for every one question I get answered, 10 more are raised," he says.

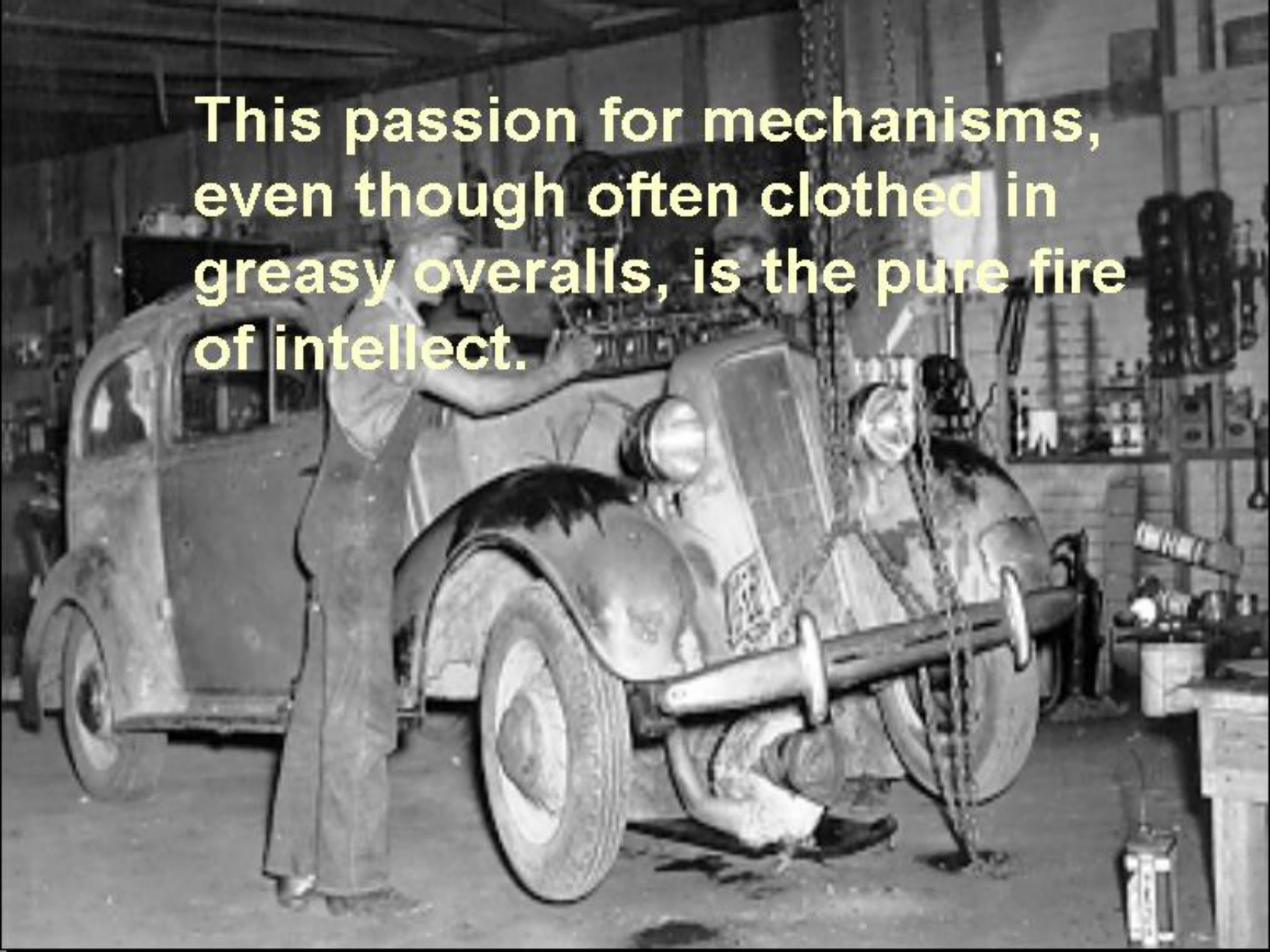
For North Dakota no-tiller Gabe Brown, failure isn't an option - it's a requirement. That's because Brown believes that constant change drives an ever improving system.

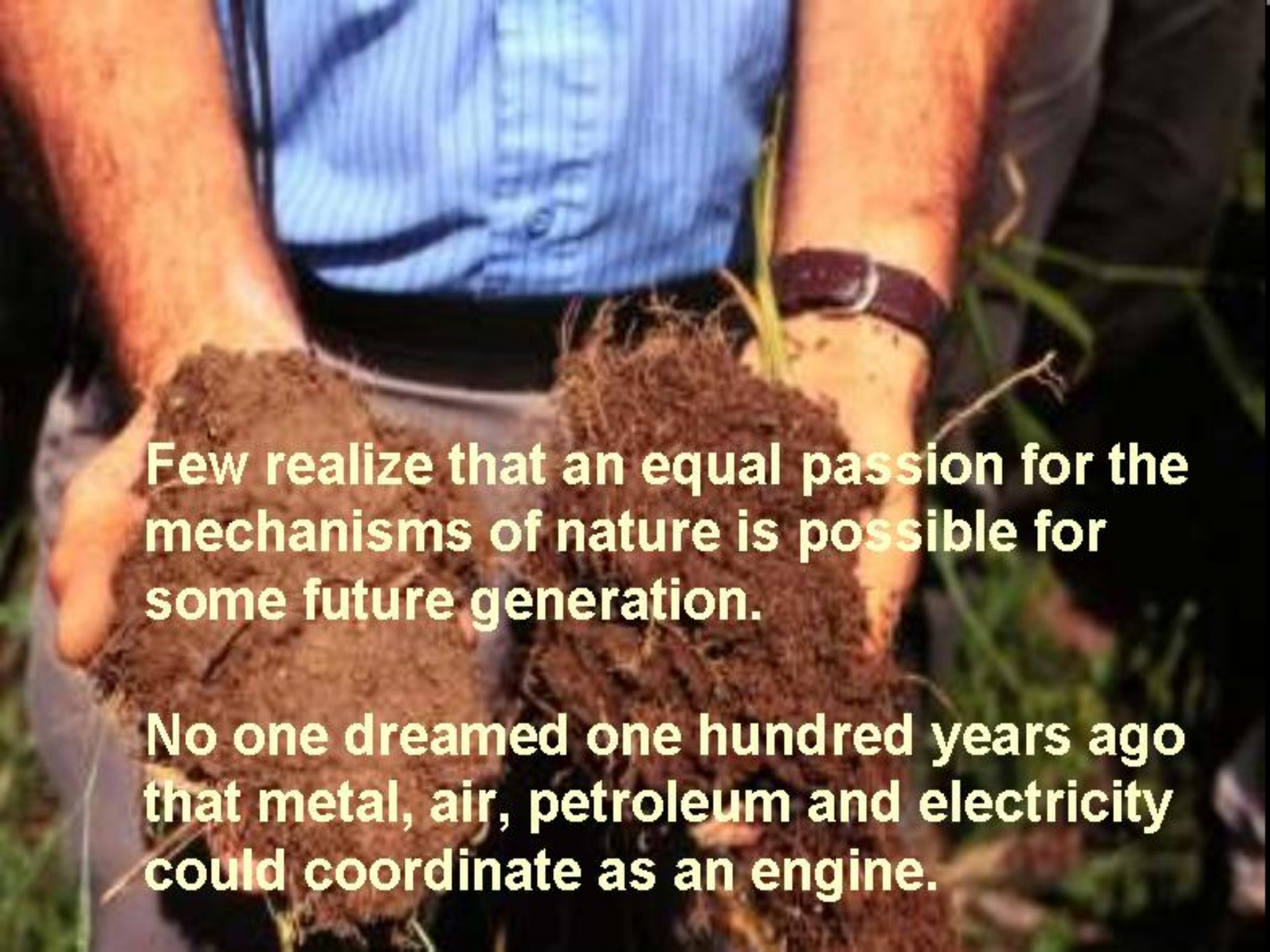
"We want to fail at something on this farm every year" **says the Bismarck area producer who crops ~ 1500 acres and grazes ~ 2000 acres.** ***"If I don't fail at something, I'm not trying enough things."***



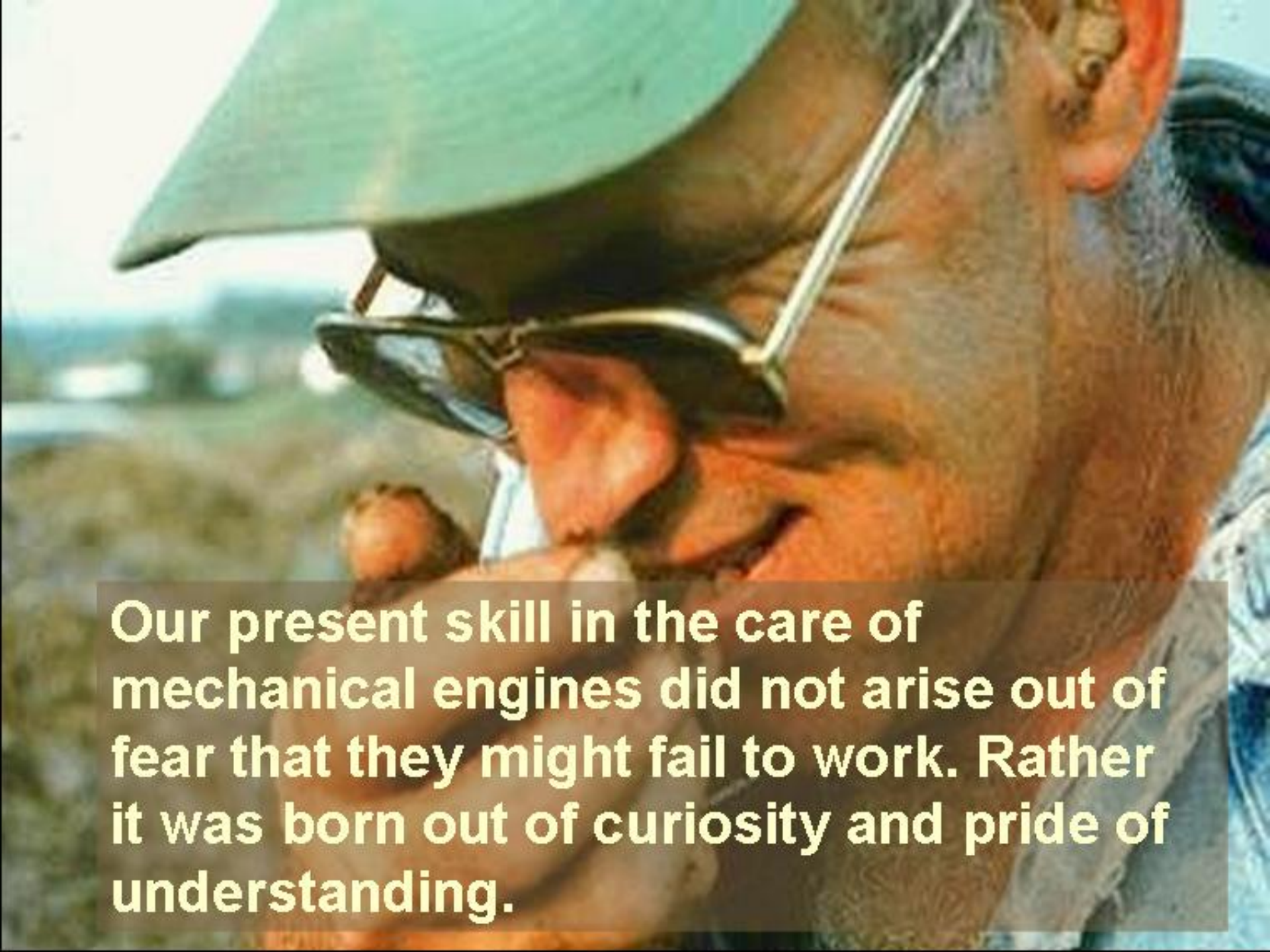
Paraphrased from
"The Farmer as a Conservationist"
by Aldo Leopold

In a surprising number of men there burns a curiosity about machines and loving care in their construction, maintenance and use.


This passion for mechanisms, even though often clothed in greasy overalls, is the pure fire of intellect.


Few realize that an equal passion for the mechanisms of nature is possible for some future generation.
No one dreamed one hundred years ago that metal, air, petroleum and electricity could coordinate as an engine.

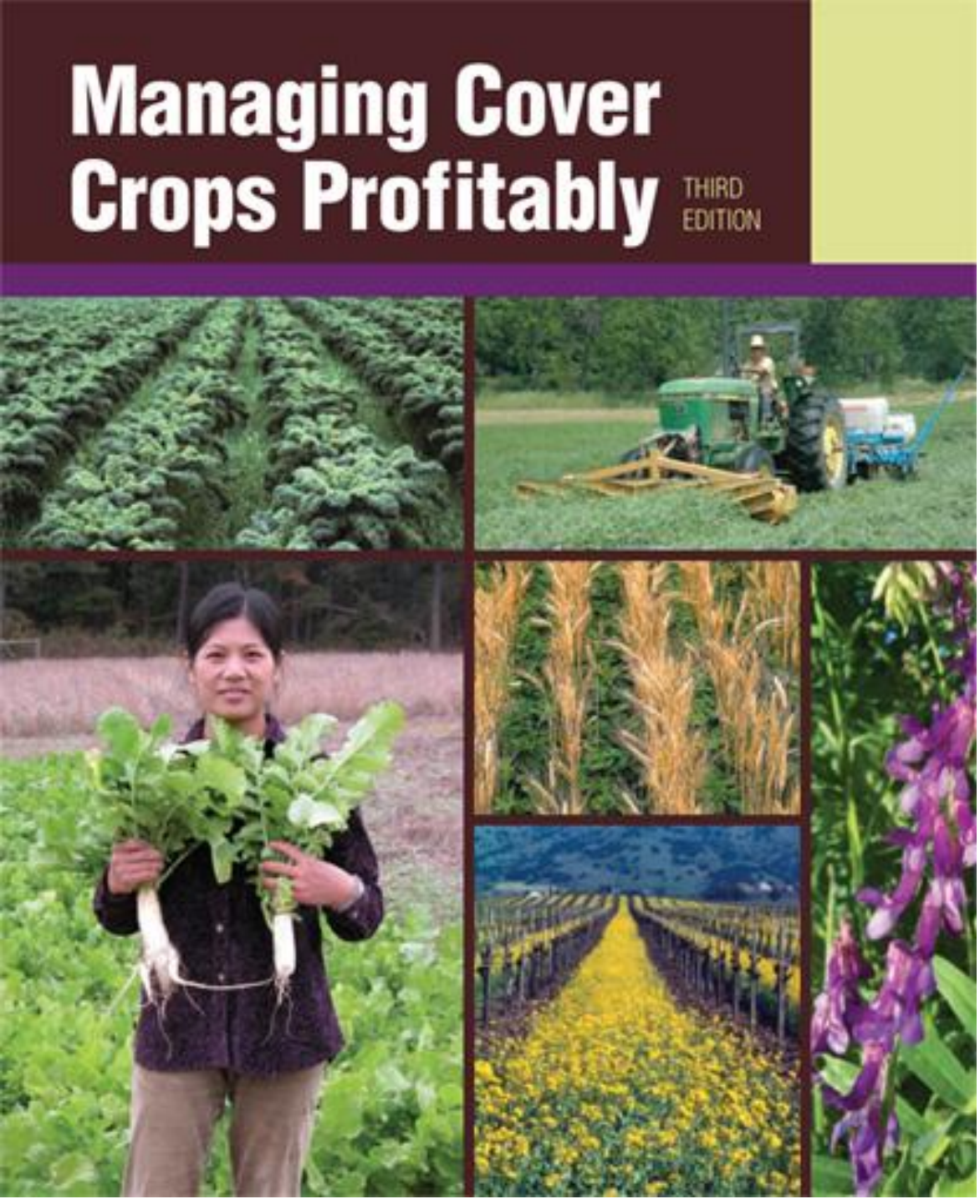

Few realize today that soil, water, plants and animals are parts of an ecological engine, subject like any other to malfunction if improperly assembled or maintained.


Our present skill in the care of mechanical engines did not arise out of fear that they might fail to work. Rather it was born out of curiosity and pride of understanding.

Are you an early adopter?

adopt ≠ adapt

Are you a master adapter?



Best single reference on cover crops available.

The entire book is available on-line for free.

http://www.mccc.msu.edu/documents/ManagingCCProfitably.pdf

SELECTING THE BEST COVER CROPS FOR YOUR FARM

by Marianne Sarrantonio

Cover crops provide many benefits, but they're not do-it-all "wonder crops." To find a suitable cover crop or mix of covers:

- **Clarify** your primary **needs**
- **Identify** the best **time** and **place** for a cover crop in your system
- **Test** a few options

This book makes selection of cover crops a little easier by focusing on some proven ones. Thousands of species and varieties exist, however. The steps that follow can help you find crops that will work best with a mi

1. Identi

Review *A*
what yo
Narrowin
perhaps
fy your
common

- Provid
- Add organic matter
- Improve soil structure
- Reduce soil erosion
- Provide weed control
- Manage nutrients
- Furnish moisture-conserving mulch

You might also want the cover crops to provide habitat for beneficial organisms, better traction during harvest, faster drainage or another benefit.

2. Identify the Best Place and Time

Sometimes it's obvious where and when to use a cover crop. You might want some nitrogen before a corn crop, or a perennial ground cover in a vineyard or orchard to reduce erosion or improve weed control. For some goals, such as building soil, it may be hard to decide where and when to schedule cover crops.

To plan how and where to use cover crops, try the following exercise:

Look at your rotation. Make a timeline of 18 to 36 monthly increments across a piece of paper. For each field, pencil in current or probable rotations, showing when you typically seed crops and when you harvest them.

If possible, add other key information, such as rainfall, frost-free periods and times of heavy labor or equipment demand.

Look for open periods in each field that correspond to good conditions for cover crop estab-

farm, as
l work
overlap

n some

ns, seed
a hard
excep-

tion and can be planted a little later. If ground cover and N recycling needs are minimal, rye can be planted as late as the frost period for successful overwintering.

You might seed a cover right after harvesting a summer crop, when the weather is still mild. In cooler climates, consider extending the window by **overseeding** (some call this **undersowing**) a shade-tolerant cover before cash crop harvest. White clover, annual ryegrass, rye, hairy vetch, crimson clover, red clover and sweetclover tolerate some shading.

If overseeding, irrigate afterwards if possible, or seed just before a soaking rain is forecast. Species with small seeds, such as clovers, don't need a lot of moisture to germinate and can work their way through tiny gaps in residue, but larger-seeded species need several days of moist conditions to germinate.

Lots of good chapters on cover crop biology

Chart 3A **CULTURAL TRAITS**

	Species	Aliases	Type[1]	Hardy through Zone[2]	Tolerances					Habit[3]	pH (Pref.)	Best Established[4]	Min. Germin. Temp.
NONLEGUMES	Annual ryegrass *p. 74*	Italian ryegrass	WA	6						U	6.0–7.0	ESp, LSu, EF, F	40F
	Barley *p. 77*		WA	7						U	6.0–8.5	F, W, Sp	38F
	Oats *p. 93*	spring oats	CSA	8						U	4.5–7.5	LSu, ESp W in 8+	38F
	Rye *p. 98*	winter, cereal, or grain rye	CSA	3						U	5.0–7.0	LSu, F	34F
	Wheat *p. 111*		WA	4						U	6.0–7.5	LSu, F	38F
	Buckwheat *p. 90*		SA	NFT						U/SU SU	5.0–7.0	Sp to LSu	50F
	Sorghum-sudan. *p.*											LSp, ES	65F
BRASSICAS	Mustards *p.81*											Sp, LSu	40F
	Radish *p. 81*											Sp, LSu, EF	45F
	Rapeseed *p. 81*											F, Sp	41F
LEGUMES	Berseem clover *p.*											ESp, EF	42F
	Cowpeas *p. 125*	crowder peas, southern peas	SA	NFT						SU/C	5.5–6.5	ESu	58F
	Crimson clover *p. 130*		WA, SA	7						U/SU	5.5–7.0	LSu/ESu	
	Field peas *p. 135*	winter peas	WA	7						C	6.0–7.0	F, ESp	41F
	Hai[illegible]												[illegible]F
	Me[illegible]												[illegible]F
	Red clover *p. 159*		SP, B	4						U	6.2–7.0	LSu; ESp	41F
	Subterranean cl. *p. 164*	subclover	CSA	7						P/SP	5.5–7.0	LSu, EF	38F
	Sweetclovers *p. 171*		B, SA	4						U	6.5–7.5	Sp/S	42F
	White clover *p. 179*	white dutch ladino	LP, WA	4						P/SU	6.0–7.0	LW, E to LSp, EF	40F
	Woollypod vetch *p. 185*	Lana	CSA	7						SP/C	6.0–8.0	F	

Lots of good tables comparing species

Not much info on planting technologies

Midwest Cover Crops Council



Home

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History
Mission and vision
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MCCC meetings

Cover Crop Resources
Cover crop species
Cover crops selector
Innovator Profiles
Extension material

WELCOME TO THE MIDWEST COVER CROPS COUNCIL WEBSITE

The goal of the *Midwest Cover Crops Council* (MCCC) is to facilitate widespread adoption of cover crops throughout the Midwest, to improve ecological, economic, and social sustainability.

WHO WE ARE?

The MCCC is a diverse group from academia, production agriculture, non-governmental organizations, commodity interests, private sector, and representatives from federal and state agencies collaborating to address soil, water, air, and agricultural quality concerns in the Great Lakes and Mississippi river basins (including Indiana, Michigan, Ohio, Manitoba, Ontario, Illinois, Wisconsin, Minnesota, Iowa, and North Dakota).

WHY COVER CROPS?

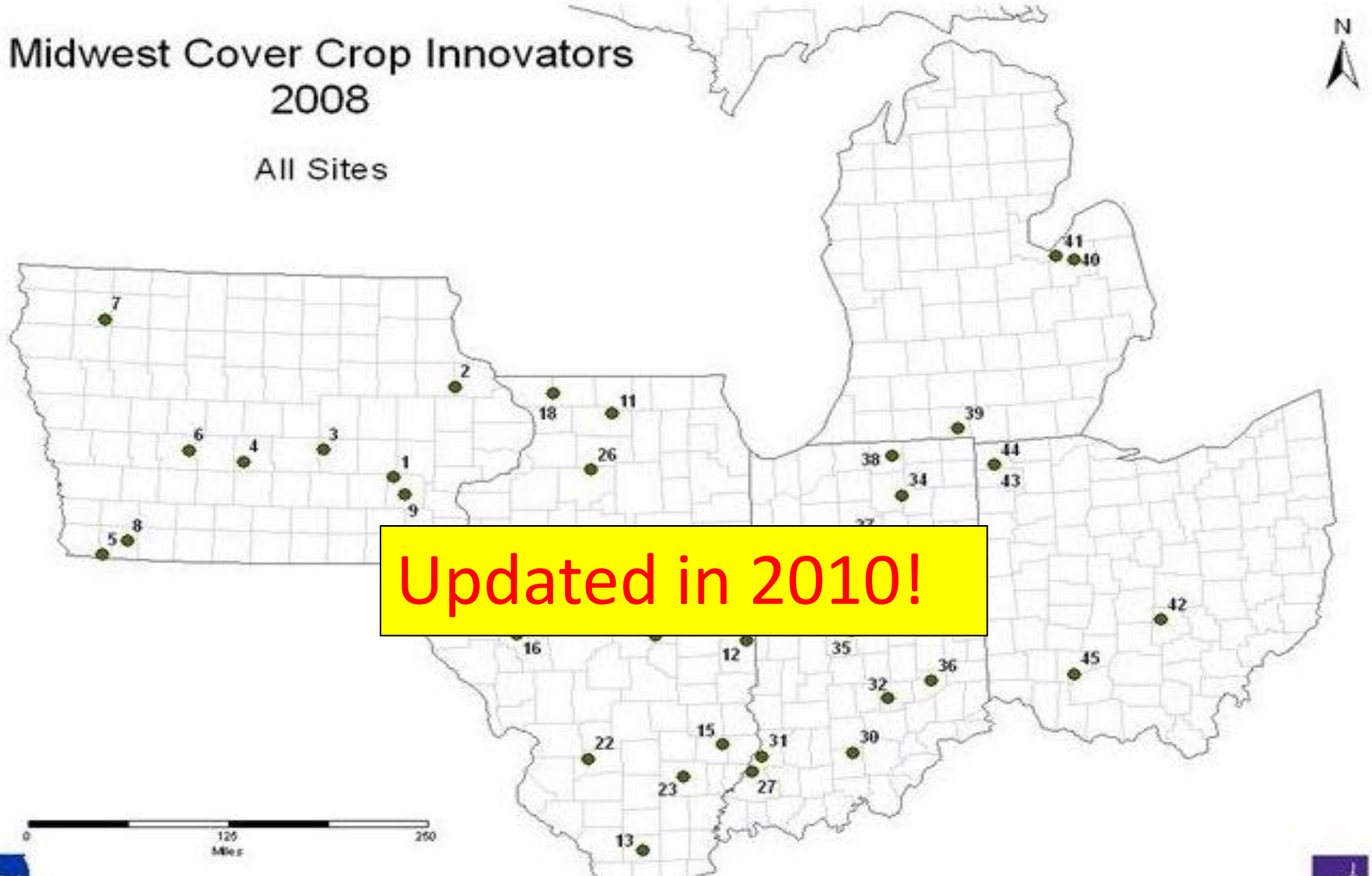
NEWS

Three new fact sheets are available from OSU Extension

- Using Cover Crops to Convert to No-Till
- Sustainable Crop Rotations with Cover Crops
- The Biology of Soil Compaction

2010 MCCC Meeting/Workshop
March 3-4
Ames, IA
Click here for the brochure

INNOVATOR PROFILES



http://www.sare.org/publications/croprotation/croprotation.pdf

Crop Rotation on Organic Farms

A PLANNING MANUAL

Charles L. Mohler & Sue Ellen Johnson, editors

Sustainable Agriculture Research and Education (SARE)
Natural Resource, Agriculture, and Engineering Service (NRAES)

This FREE DOWNLOAD contains some great info

- Problems and opportunities for over 500 crop sequences

- Characteristics of more than 60 crops and 70 weeds

- Crop diseases hosted by over 80 weed species

- Modes of transmission for 250 diseases of 24 crops

- Thirteen sample four- and five-year vegetable and grain crop rotations Managing Crop Rotation Chart with key tasks & steps

- Sample worksheets and calculations

- Step-by-step procedure for determining crop rotation plans

Have you attended a cover crop field day?

If not, make plans to attend one in 2011

ryegrass, radishes and ridging (pics)

View previous thread :: View next thread
Message format
Forums List -> Crop Talk
Threaded Go

jbgruver

Posted 9/29/2009 22:15 (#865190)
Subject: ryegrass, radishes and ridging (pics)

I took a bunch of photos at the WIU Organic research farm today.

The first photo shows a 10' wide strip of "Bounty" annual ryegrass that was drilled about 2 weeks ago... I also overseeded ryegrass i off.

The next p d about 2 weeks ago... you can't r e Tillage radishes in an adjacent f

The next p

The next p h up the ridges tomorrow. The ridges organic ridge-till.

The last photo shows an ear of our purple and gold popcorn. We've been selling it on campus in 1/2 bags but decide to try som 120(ater in the fall with

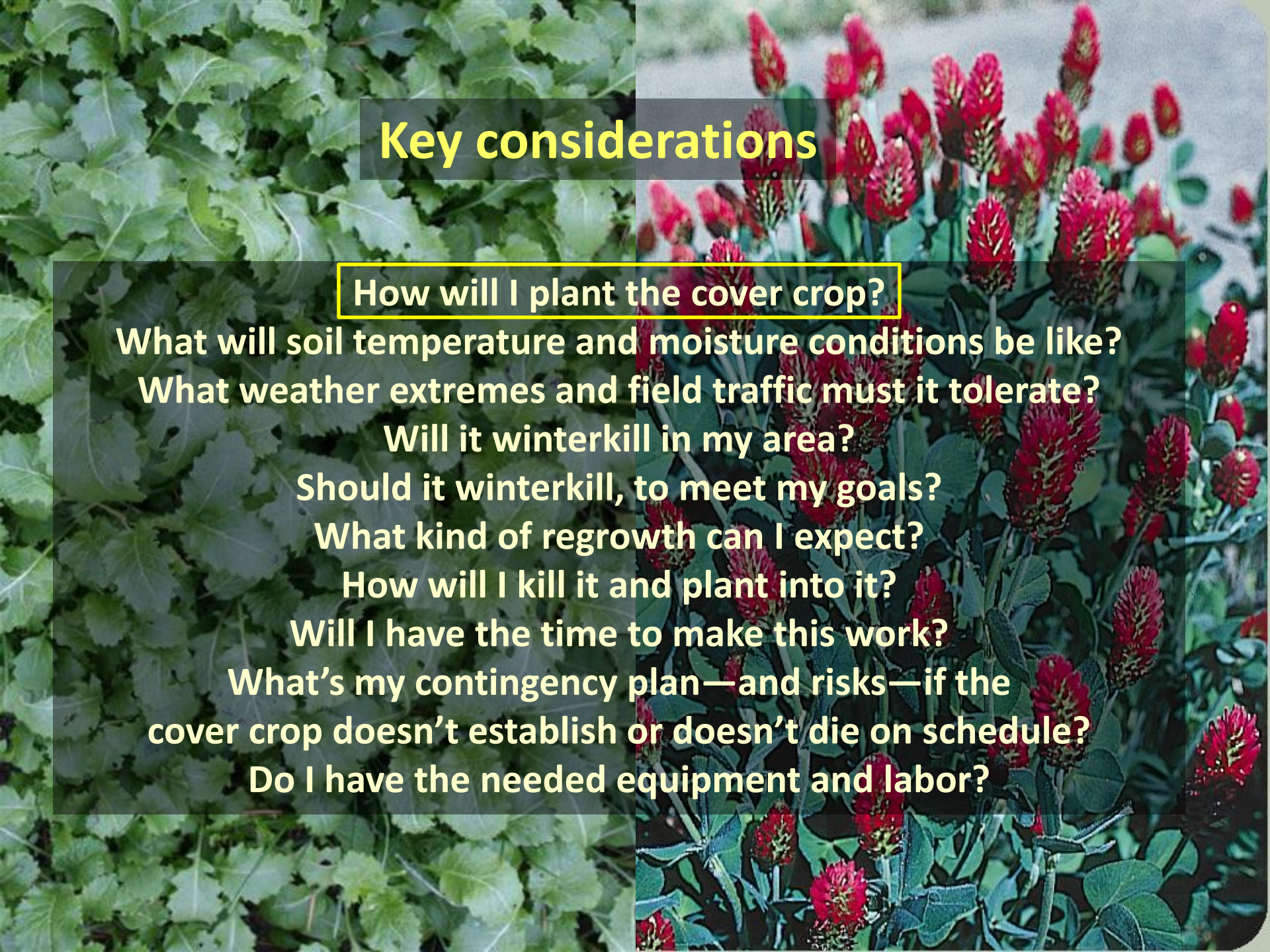
If you can't make it to a field day, learn about cover crop innovation through participating in on-line discussions

How many of you are "Ag Talkers"?

****

The weather is looking pretty wild for our Twilight tour on Thursday (10/1) but we'll be out there rain or shine.
here is a link to the press release which includes directions:
http://www.wiu.edu/newsrelease.sphp?release_id=7557

We will have another tour in about 2 weeks.



Key considerations

How will I plant the cover crop?
What will soil temperature and moisture conditions be like?
What weather extremes and field traffic must it tolerate?
Will it winterkill in my area?
Should it winterkill, to meet my goals?
What kind of regrowth can I expect?
How will I kill it and plant into it?
Will I have the time to make this work?
What's my contingency plan—and risks—if the cover crop doesn't establish or doesn't die on schedule?
Do I have the needed equipment and labor?

A lot more cover crops would get planted if we all had a several month window of opportunity, a good drill and an assistant

Crops

Huge news in radishes

By TIM WHITE

Key Points

- Oilseed radishes offer new cover crop potential.
- Planted radishes grow bigger than drilled ones.
- Adding Austrian winter peas provides nitrogen.

JUST when you think David Brandt has done about everything there is to do with cover crops, he comes up with something — well, something different. Maybe that's why Randall Reeder, Ohio State University agronomist, took Bob Stewart, a colleague visiting from the Dryland Institute in Canyon, Texas, to visit Brandt's farm near Carroll.

"If there is a way to break compaction or add some nitrogen, Dave is going to give it a try," says Reeder.

"I learned a lot from my visit," Stewart says. "When farmers speak, scientists should listen."

Brandt showed the researchers a variety of test plots, including his latest take on cover crops: dicom oilseed radishes.

"I'd messed around planting them with a drill, but really wasn't satisfied with what I was getting, so we put them in the planter this [illegible]. Using a new [illegible] plates spe[illegible] handle the [illegible] Brandt pla[illegible] inches apa[illegible] following w[illegible] result was huge radishes that are up to 30 inches long.

Brandt says leaving the radishes to rot will produce a com[illegible] should be very helpful."

Brandt especially likes the trial where he planted the radishes in rows alternating with Austrian winter peas. As legumes, the peas return about 75 units of nitrogen to the soil a year. "That's about one third of [illegible]s. With the [illegible]tting about [illegible]radishes in [illegible]t $2.25 an [illegible]d to about [illegible] it in with [illegible]d another $10 per acre to his costs.

Brandt plans to be able to use GPS to place the corn right alongside the radish plants. That way it will have a moist

BIG CROP: Dave Brandt (left) and Kevin Shaeffer hoist the huge oilseed radishes that grew following Brandt's wheat crop. Much of the radish growth is above the soil.

TINY SEED: Brandt's White planter uses special plates to plant wheat and radishes.

Planters can do an even better job than a drill

"I made two passes in opposite directions with a JD 1700 MaxEmerge 38 in row planter with the hitch offsett 4 in to one side. I also moved the drive gauge wheels on the planter over 4 in so that they would run in the row middles to help hold the planter straight."

John Hall - Arkansas

If you grow small grains….


Are you using the most tried and true cover cropping system?
Frost seeded clover

Frost seeding opportunities

Bonjour Brian,

I spread the ryegrass with my air-cart fertiliser with a 60 foot boom. The ryegrass was mixed with urea at my coop. I applied 180 kg/ha of urea with 12 kg/ha. The application was done on the 26th of May. Spring wheat was seeded april 16.

Jocelyn

British Farming Forum

"Thinking of broadcasting the rape with a stocks fan jet amidst the standing wheat and letting the rain do the work. Problem is fan jet is 12m, tramlines are 24m. Maybe could dash out with combine between tramlines on (dry) Sunday to clear a path for sprayer and fanjet. Home saved seed so maybe worth a shot."

"You wouldn't be the first. Near neighbour used to sow 400 acres a day into his standing wheat. Through a Fan Jet mounted on top of his Bateman sprayer to get the extra height needed for the spread. Combine a few days later chopping the straw. Job done."

Hairy vetch can be successfully planted after wheat harvest. On the two occasions (out of 18 site-years of the WI Cropping Systems Trial) when the red clover failed to establish well, the vetch produced an average of 115 lbs./a of nitrogen, providing an excellent “back-up plan” that reduces one of the potential risks of relying on a companion-seeded cover crop for nitrogen.

July/August plantings of vetch or other cover crops are riskier than frost seeding clover.

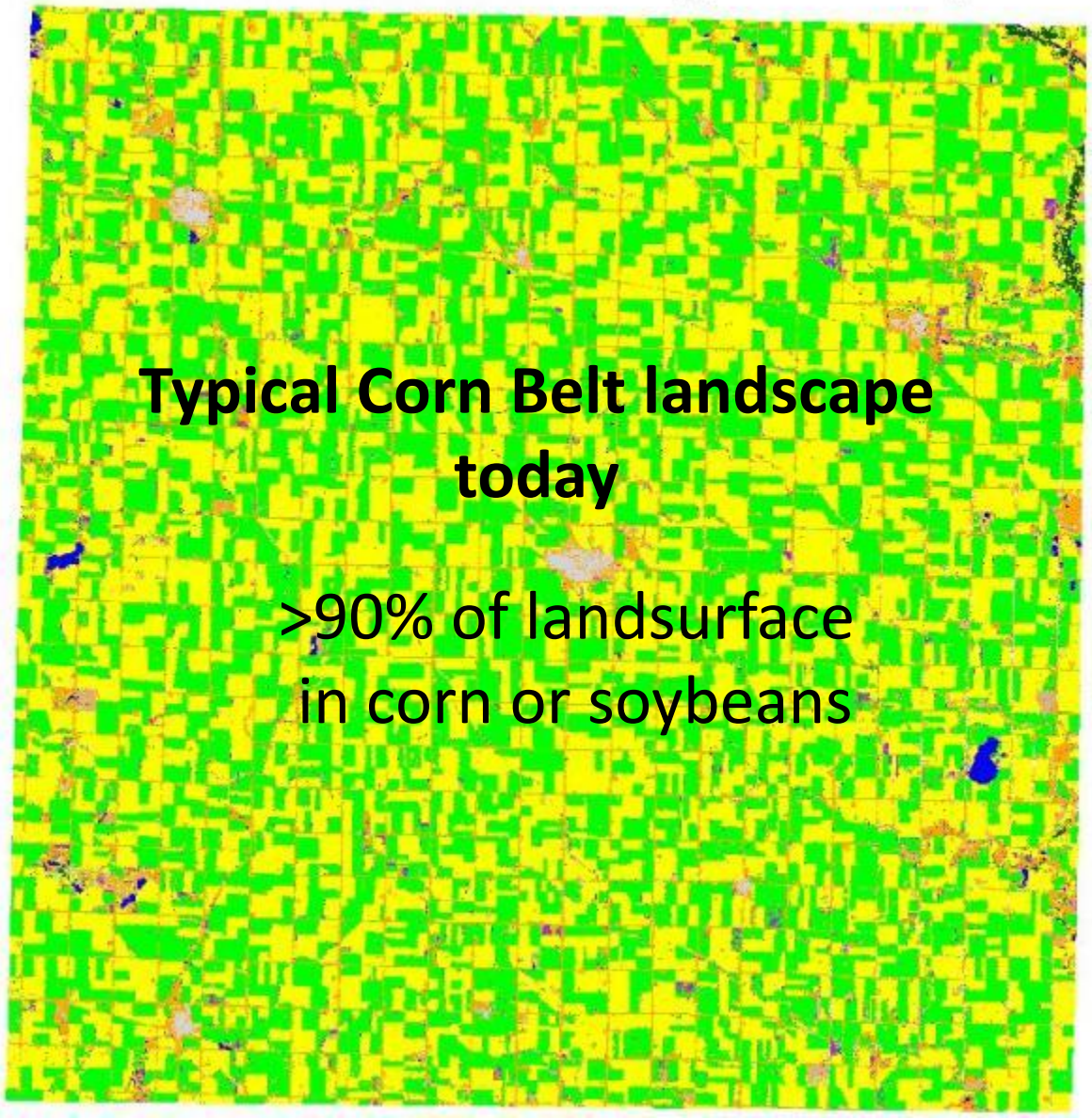
REALITY CHECK

PLANTED ACREAGE - PRINCIPAL CROPS

Crop	Illinois		United States	
	2009	Indicated 2010	2009	Indicated 2010
	Thousand acres			
Corn - All purposes	12,000	12,600	86,482	88,798
Soybeans	9,400	9,500	77,451	78,098
Winter Wheat 1/	850	350	43,311	37,698
Sorghum - All purposes	40	40	6,633	6,360
Oats	40	40	3,404	3,364
All Hay 2/	610	610	59,755	60,460

1/ Includes acreage sown preceding fall.
2/ Hay acres for harvest.

2004 Pocahontas County, Iowa Cropland Data Layer



Typical Corn Belt landscape today

>90% of landsurface in corn or soybeans

USDA

NASS

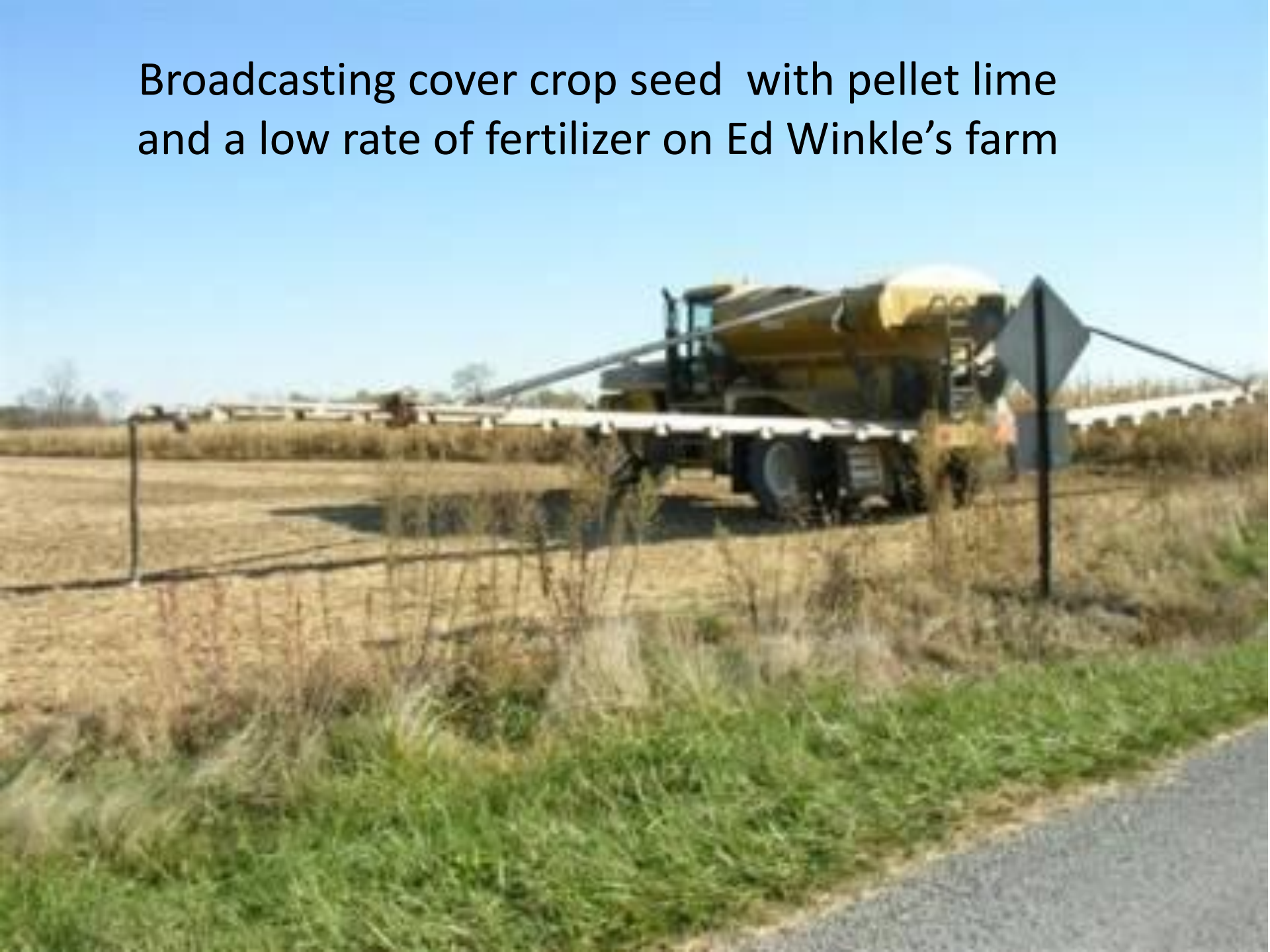
Continuous NT corn w/ hairy vetch Geff, IL - Terry Taylor

We plant a corn that is in the early part of the normal maturity range for the area. The planting date varies, but is usually first week of May. If this happens, we can expect harvest at 25% by Sept. 15. We then immediately drill the vetch at 20#/ acre with a JD 1560 drill.

Last year, we planted the corn in June and flew the vetch on in late Sept. Harvest was late Oct. We got lucky with all the rain and got a good stand. I do not anticipate that field looking like the pix by May 1 this year.

Drilling annual ryegrass into the stubble from 90 bu wheat + 50 bu double crop soybeans on Ed Winkle's farm

Broadcasting cover crop seed with pellet lime and a low rate of fertilizer on Ed Winkle's farm



Dan DeSutter plants most of his cover crops with a Salford tool equipped with a Valmar air-seeder. He also uses a drill when possible.

The CC planting methods shown on the previous slides work well but can only cover a limited # of acres after harvest in the Corn Belt

Other options are clearly needed!

Student: Which cover crops have you tried? how many acres? following/preceding which crops?

Joe Nester replied:

We just inter-seeded 14,000 acres of corn and soybeans with annual ryegrass. We used a helicopter service out of Minnesota to seed it. We used annual ryegrass a year ago, seeding with drills after wheat and soybeans, but the planting date was too late to wait after beans. Excellent where seeded after wheat about Sept. 1. Our experience is limited, but the idea is really taking off, to hold the soil in place over the winter, keep nutrients within the field, and help with timely no-till planting in the spring.

Photo from Joe Nester

Farmers have been using aerial seeding to improve post-harvest grazing for a long time


Cliff Schuette's farm in S IL
Barkant Turnips-3 lbs
Rye 2 Bu
Airplane $8/Acre
Corn 183 Bu/acre
Atrazine 1 lb
Partner April 28


An
Aerial seeded annual ryegrass on John Hebert’s farm in IL

Aerial seeded radishes in OH on Oct 29, about 6 weeks after aerial seeding and 4 weeks after corn harvest.

Set-up for efficient aerial seeding in SE IA

Steve Nebel


Steve Nebel

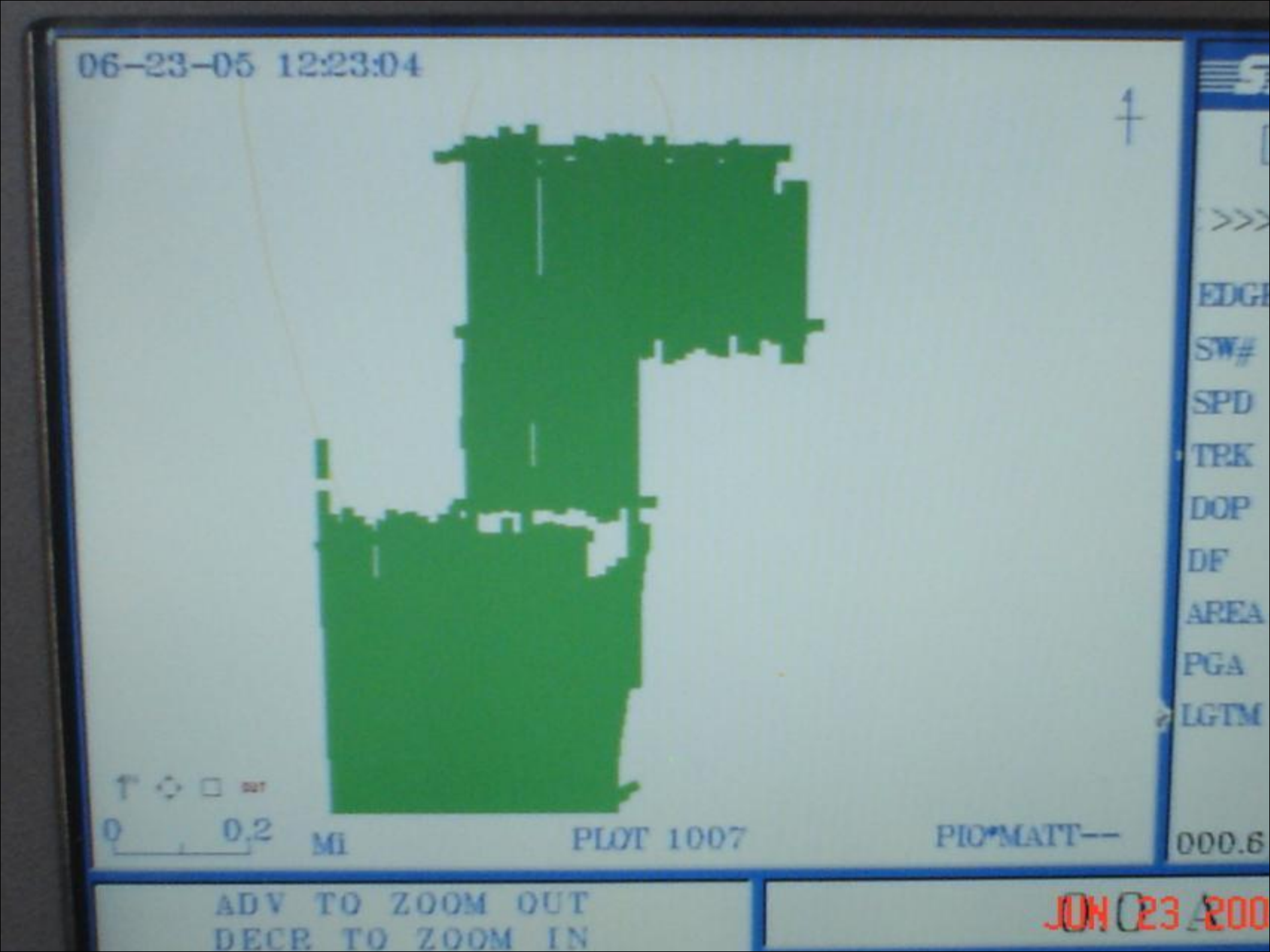

Steve Nebel


Steve Nebel


Steve Nebel


Steve Nebel

Aerial application is getting high-tech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Is this the best we can do?
08.07.2009


Can technology help us get better canopy penetration and more uniform distribution of seed?

Recommended Aerial Seeding Rates

- Cereal rye 1.5 – 2.0 bu / acre
- Turnips 3.0 lb / acre
- Millet 1.5 lb / acre
- Wheat 1.0 – 2.0 bu / acre
- Soybeans 2 bu / acre

Recommended Aerial Seeding Dates in Central IL

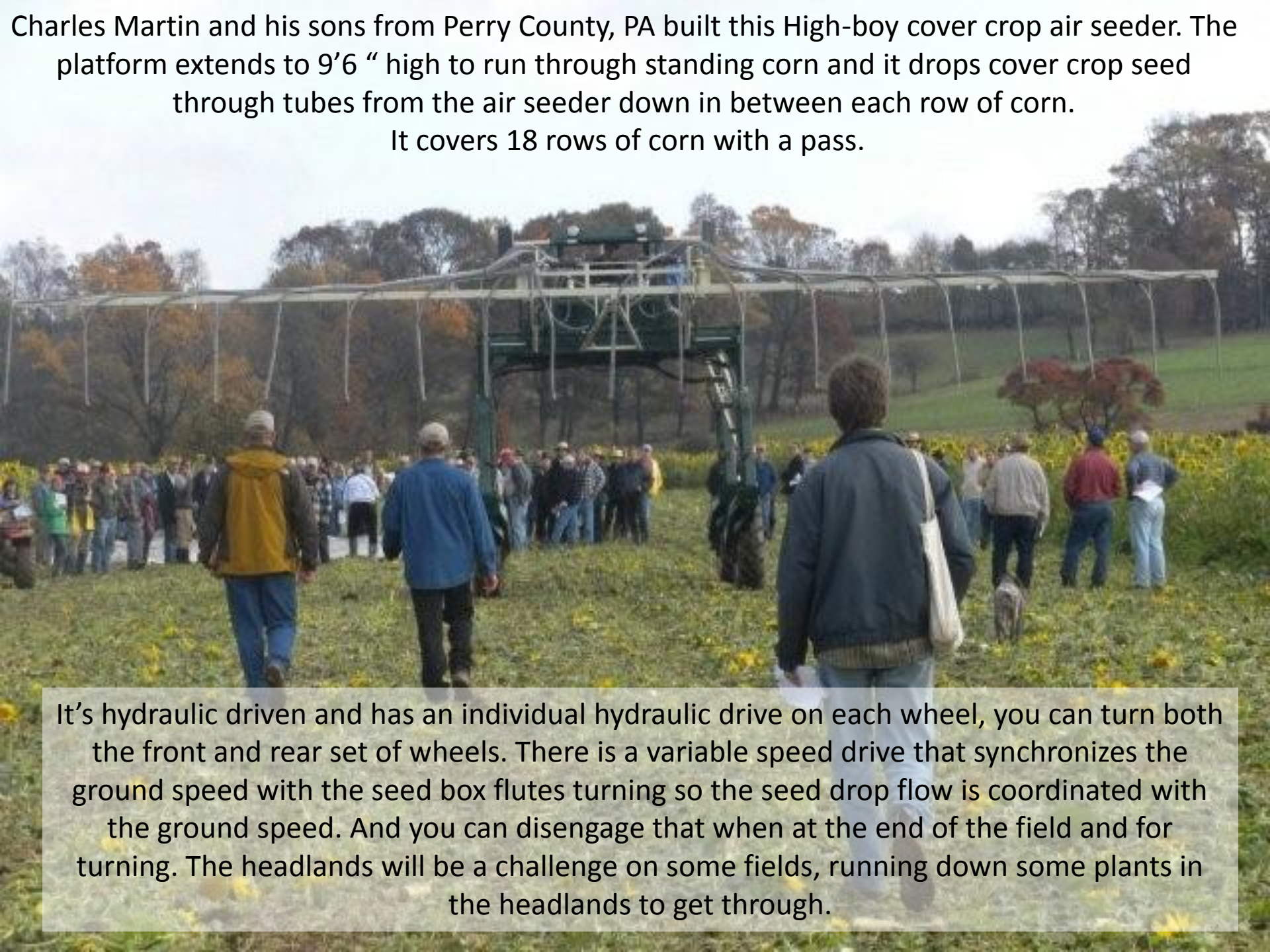
- **Small Grains**
  - Late August into standing soybeans
  - Mid-to-Late September into standing corn
- **Seeding Legumes**
  - Early August into standing soybeans
  - Early September into standing corn

Efficient reloading of seed is critical!

“Mr. Wiley said that he found an old de-tasseling machine and added a seeder to it to spread cereal rye into standing corn in late summer.”


A few
steps up…

Charles Martin and his sons from Perry County, PA built this High-boy cover crop air seeder. The platform extends to 9’6 “ high to run through standing corn and it drops cover crop seed through tubes from the air seeder down in between each row of corn.
It covers 18 rows of corn with a pass.

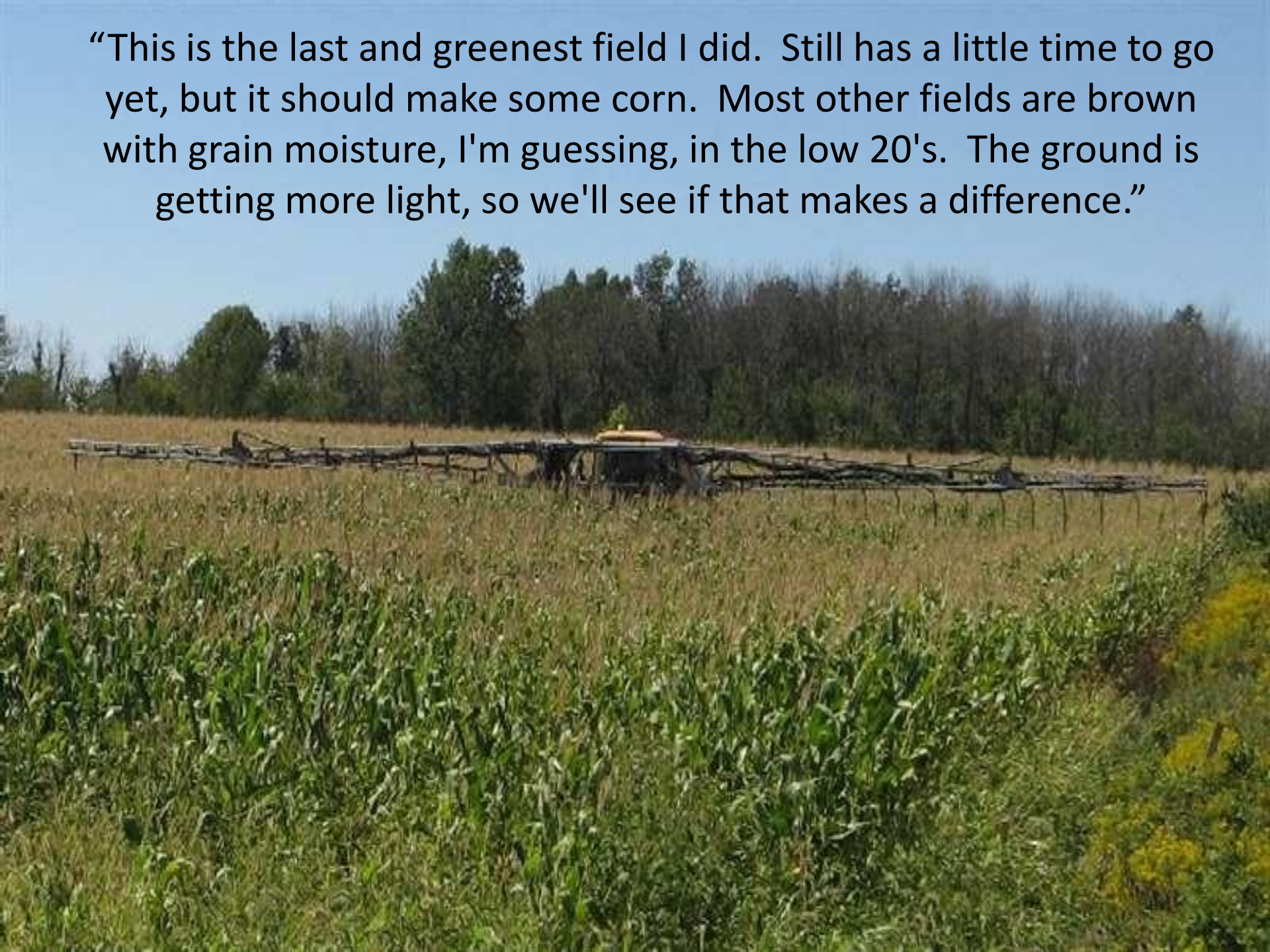


It’s hydraulic driven and has an individual hydraulic drive on each wheel, you can turn both the front and rear set of wheels. There is a variable speed drive that synchronizes the ground speed with the seed box flutes turning so the seed drop flow is coordinated with the ground speed. And you can disengage that when at the end of the field and for turning. The headlands will be a challenge on some fields, running down some plants in the headlands to get through.

"I have been working to build this seeder to seed cover crops into corn & beans. Got the idea last year from posts on here. Thought I would share my version. I'm using a Hagie STS 12 with a Gandy Orbit Air seed box. I can cover 90 feet / 36 rows and the hopper holds 65 bu. "

Andy Ambriole's Highboy air seeder

“This is the last and greenest field I did. Still has a little time to go yet, but it should make some corn. Most other fields are brown with grain moisture, I'm guessing, in the low 20's. The ground is getting more light, so we'll see if that makes a difference.”



“It's kinda hard to tell the seed from the corn pollen. The big lighter pieces are pollen. The smaller darker ones are ryegrass and the little orange balls are crimson clover. The seed mix was 80/20 ryegrass/clover”


Don Birky's
seeder in
Central IL

Don and Matt Birky's unique highboy with 10 feet and six inches of clearance could attract a crowd for its high-rising maneuvers, but the father-son team created the special equipment for a tough job.

The highboy, dubbed High Roller, was developed to air seed legumes and other cover crops into standing corn in August. The Birkys, who operate On Track Farming Inc. in rural Gibson City, put the highboy through its paces last week.


Precision Seeding of Cover Crops
Bio-strip till
Attempt #1 – radishes planted on 30” rows with a push seeder

Attempt #2


Tillage radish on 30” rows with oats on 7.5” rows

November 2010

Radishes planted on 30” rows using milo plates in our planter


Radish planted in volunteer cereal rye


Steve Carruther's farm in Ontario, Canada

Brian Harnish's farm in PA

Planted 9-20 using a Kinze w/pusher units. Had backing plates on the brush meters w/bean plates. Worked very well for the rye but I couldn't get the meters to turn slow enough for the radish. I was using sprocket combinations that the book never mentions! I ended up w/ 6 lb of radish seed, was shooting for 2. Goal is to plant corn on radish row next spring, hopefully letting the rye/barley live until the corn is planted.

"I planted the radish with the front units and the rye with the back units on a 3500 Kinze. I had to cobble together a second transmission for the front units so I could set the front and rear units separately. I can't recall specifics right now of what sprockets I used"

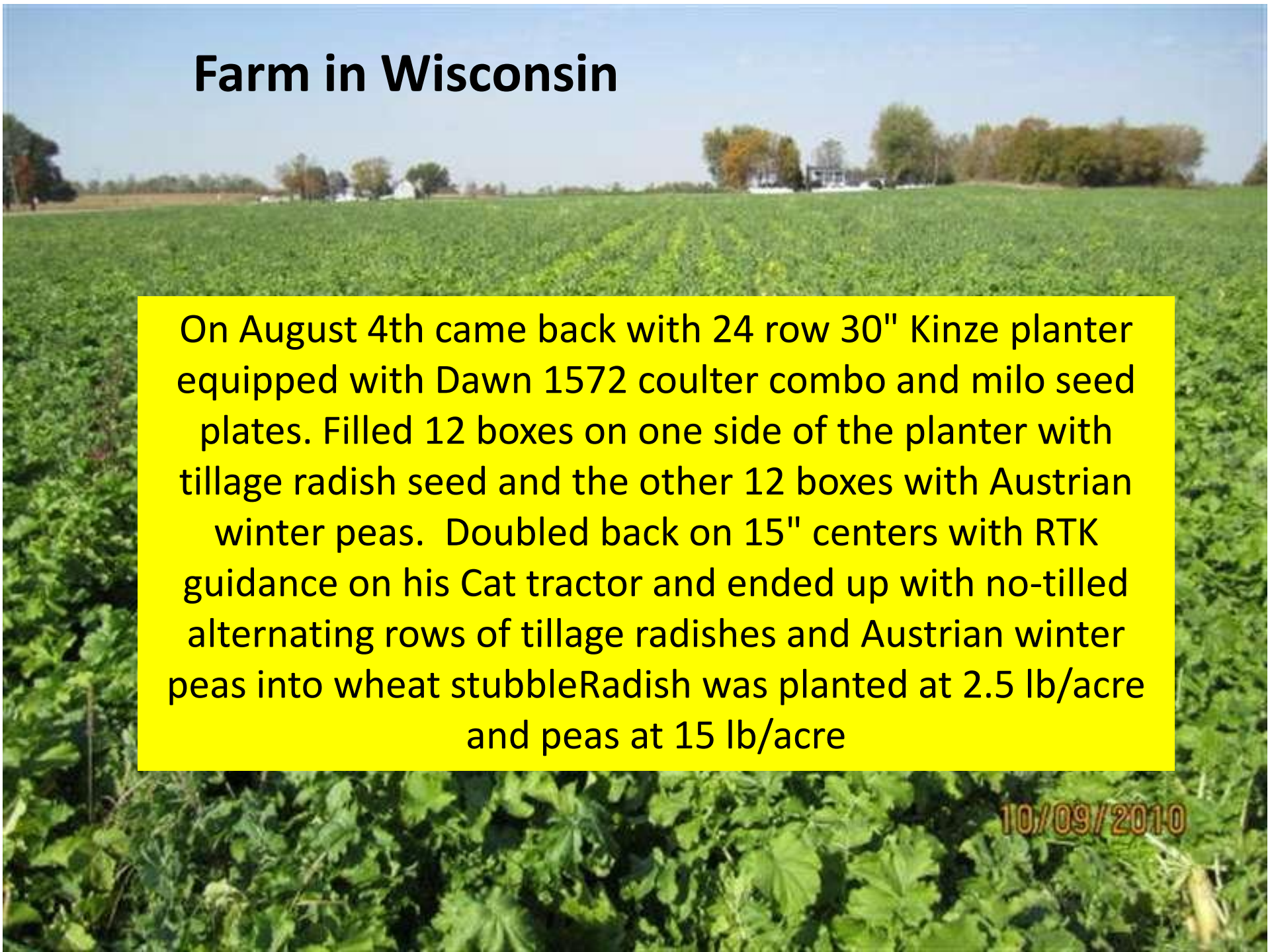
Harnish farm

Lancaster County, PA

Terry Taylor’s new bio-strip-till rig


Terry Taylor planted radishes w/ hairy vetch, crimson clover and Austrian winter peas in fall 2010

Farm in Wisconsin



On August 4th came back with 24 row 30" Kinze planter equipped with Dawn 1572 coulter combo and milo seed plates. Filled 12 boxes on one side of the planter with tillage radish seed and the other 12 boxes with Austrian winter peas. Doubled back on 15" centers with RTK guidance on his Cat tractor and ended up with no-tilled alternating rows of tillage radishes and Austrian winter peas into wheat stubbleRadish was planted at 2.5 lb/acre and peas at 15 lb/acre


Bio-strip-till in VA


Seeding cover crops with
liquid manure
MICHIGAN STATE
UNIVERSITY
Husky

Techneat

engineering ltd

Techneat Engineering builds innovative, exciting and cost-effective engineering solutions

Late flowering rape benefits early Autocast

New later flowering and low biomass oilseed rape varieties are especially well suited to the very low cost Autocast establishment technique, particularly for crops sown early when combining wheat at the beginning of August, according to Cambridgeshire farmer and Autocast inventor, Michael Godfrey.

"[illegible] sown crops to avoid problems of excessive early growth, which can still be vigorous in a mild autumn," he advises. "Frost damage during flowering leads to a high proportion blind pod sights affecting yield and even seed maturity; later flowering gives a better pod and seed set."

In the South and Eastern Counties he advocates that Expert would appear a good choice, combining high yield with later flowering; slightly later maturity will have little impact for growers. In the north NKBravour has even better yield and

Planting while harvesting


CLAAS


AUTOCAST V2


Dwayne Beck's set-up for
planting while harvesting

Interseeding Small-seeded Forages into Sod with Conventional Corn/Soybean Planters

Since the advent of the 15th Conservation Reserve Program (CRP) sign-up that ended in May 1997 and the 16th CRP sign-up that ended in November 1997, farmers have been looking for ways to interseed legumes and native grasses into established CRP sod. Aproximately 523,000 and 341,000 acres, respectively, were accepted in the 15th and 16th CRP sign-ups in Iowa.

Corn/Soybean Planters Are an Option

Small-seeded legumes and several of the small-seeded grasses can be interseeded through the insecticide boxes of most corn/soybean planters. Just like granular insecticides, many of the small-seeded forages can be accurately metered directly infurrow or banded just in front of the press wheel. Setting the double disk openers about 1/2" to 3/4" deep and running the seed infurrow will give the best seed-to-soil contact and probably the best chance of success.

One advantage of placing the seed infurrow and closing with the press wheels is that herbicides can be sprayed over the row for sod suppression at the same time the seed is planted. Roundup Ultra (Monsanto), Touchdown (Zeneca), and Gramoxone Extra (Zeneca) are burndown herbicides that can be used this way. For switchgrass and some of the other warm-season grasses, Atrazine can be combined with the burndown herbicides or sprayed alone over the row with the planter.

Table 1. Ounces to pounds per acre calibration conversion for a time period equal to 3 and 4 mph.

	—400 ft of row length equals—	
	Acres	Each oz collected equals lb/acre
15" row width =	0.011	5.44
20" row width =	0.015	4.08
30" row width =	0.023	2.72
36" row width =	0.028	2.26
38" row width =	0.029	2.15
40" row width =	0.030	2.04

3 mph = 91 seconds per 400 ft
4 mph = 68 seconds per 400 ft

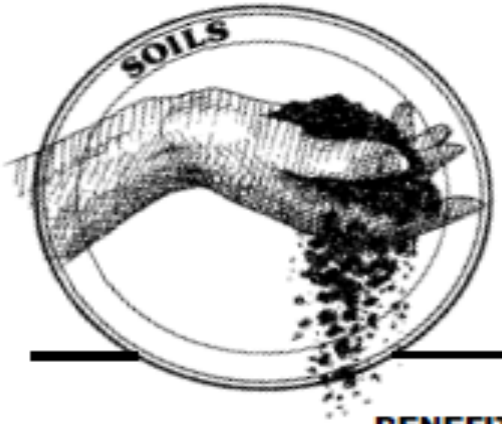
Small-seeded legumes and several of the small-seeded grasses can be interseeded through the insecticide boxes of most corn/soybean planters. Just like granular insecticides, many of the small-seeded forages can be accurately metered directly infurrow or banded just in front of the press wheel. Setting the double disk openers about 1/2” to 3/4” deep and running the seed in-furrow will give the best seed-to-soil contact and probably the best chance of success.

One advantage of placing the seed in-furrow and closing with the press wheels is that herbicides can be sprayed over the row for sod suppression at the same time the seed is planted. Roundup Ultra (Monsanto), Touchdown (Zeneca), and Gramoxone Extra (Zeneca) are burndown herbicides that can be used this way. For switchgrass and some of the other warm-season grasses, Atrazine can be combined with the burndown herbicides or sprayed alone over the row with the planter.

Actual planter calibrated: 1987 Kinze, 6-row, 30”
Representative of: Kinze planters

	#s/acre on 30” rows box setting at 3 mph					
Seed type	5	10	15	20	25	30
Alfalfa	2.1	6.2	10.3	14.4	——	——
Alsike clover	3.1	8.9	12.7	19.5	——	——
Birdsfoot trefoil	4.4	10.9	16.7	23.4	——	——
Medium red clover	2.9	7.6	11.5	16.3	——	——
Switchgrass	1.7	3.9	5.1	6.6	10.2	15.6
Sweetclover	2.6	6.7	10.5	14.1	——	——

Brand new bulletin from Penn State



Agronomy Facts 67

Management of Red Clover as a Cover Crop

Red clover can be frost seeded into small grains in early spring, over seeded into corn in early-summer and over seeded into soybeans just before leaf drop.

BENEFITS

Red clover is a short-lived perennial that is winter hardy throughout Pennsylvania. Red clover can be used as a cover crop that provides many benefits such as fixing nitrogen (N) to meet needs of the following crop, protecting soil from ero-
sion, improving
supplying forage

Red clover is ad
winter hardy in
clover survives t
does best on wel
drained soil. It p
are two types of red clover: medium red and mammoth red clover. Medium red is most common. It is quicker to establish than mammoth and grows back well after it is cut.

NITROGEN FIXATION

In a study in Wisconsin, red clover fixed enough nitrogen to supply the equivalent of 160 pounds per acre of nitrogen fertilizer. A lower nitrogen contribution is more common, however. A study in Pennsylvania showed that a one-year-old red clover stand (without harvest) contributed 70 pounds of nitrogen per acre to the first corn crop following it, while

approximately 75 percent of that supplied in the first year (in our example this would be 40 x 0.75 = 30 pounds of N in the second year). If the red clover is established in late summer or early fall, it might not fix as much nitrogen as calculated
e nitrogen benefit
ncorporated or left
ng the mulch at the
ol and will lead to

er than 0.5 inch.
deeper. So, check
n using a no-till drill. Settings may need to be changed depending on field conditions and residue cover. Use seed that has been inoculated with the appropriate *Rhizobium* strain to guarantee nitrogen fixation. The preferred time of establishment is in early spring or early summer, although establishing it after small grain crops come off is possible. The earlier the red clover is established, the more benefits it can be expected to produce the following year.

An easy method of establishment is to frost-seed red clover into standing winter wheat or barley from February to April. With this method, the red clover seed is simply broadcast

Rig for mid-summer over-seeding into corn in Ontario

totale de la rampe.

Pour ne pas faire de compétition au maïs, le ray-grass

laire du ray-grass lors d'une conférence donnée par Dan Towery, d'Ag Conservation Solutions. Il a été si convaincu des bienfaits du ray-grass annuel qu'il

Anatomie de l'appareil

À l'avant de l'arroseuse automotrice, branché sur une sortie hydraulique, on retrouve un réservoir à grains. « Pour une autonomie au champ, c'était important d'inclure une

pneumatique (ARL1500P) de la compagnie et sert aussi à l'application de chaux granulaire, chez les Tétreault. « Le réservoir est multifonctionnel, il peut appliquer de la

November 2010

Harvesting organic no-till soybeans on WIU Organic Research farm

Plot yields ranged from 42-52 bu/ac

Cereal rye self-seeded this fall

Black Medic as a Self-Seeding Cover Crop

This slide shows black medic, a self-seeding legume, regenerating under a flax crop. As the flax continues to grow, black medic forms a low-growing living mulch under the crop canopy. After the flax is harvested, the black medic continues to grow and set seed until the first killing frost.


Are you
familiar with
Kura clover?

Corn planted into Kura clover
that has received 1 qrt of glyphosate


150-200 bu corn
with 0-20 lbs of
N/ac


Kura clover after corn harvest


Competition from the clover can be managed with herbicides but strip-till may be the future of this system
On-farm innovation is needed!