INTERSEEDING COVER CROPS

Dan Towery

ACS Ag Conservation Solutions, LLC

"Blending Ag Profitability While Enhancing the Environment"

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EARLY

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EARLY & LATER

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INTERSEEDING - LATER

- Typically late August to early September
- Approximately 6 weeks before potential harvest date
- Residual herbicides & rates may need to be tweaked

INTERSEEDING - LATER

- Seeded 8/23
- Annual ryegrass, crimson clover, radish

Harvested 9/21

SEEDING LATER – DURING HARVEST

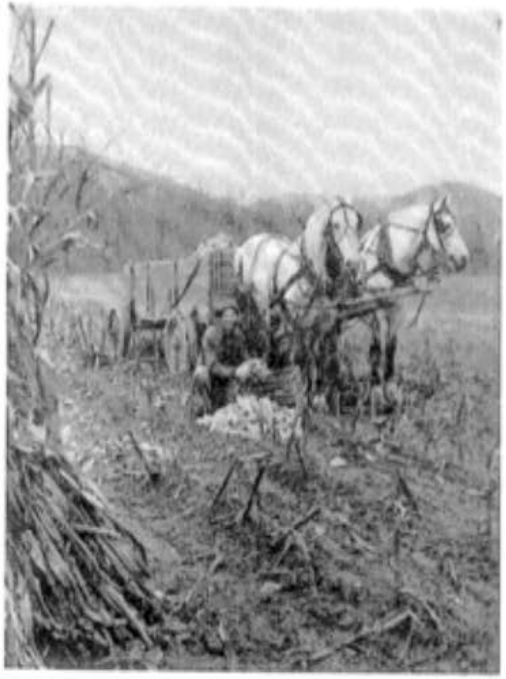
SEEDING LATER – DURING HARVEST

- Annual ryegrass seeded with harvest
- Seeding dates need to match harvest dates

INTERSEEDING EARLY – NOT EXACTLY NEW

CIRCULAR 305 FEBRUARY 1947

EFFICIENT CORN GROWING



Satisfaction in a crop well grown.

The Pennsylvania State College
SCHOOL OF AGRICULTURE
Agricultural Extension Service
State College, Pennsylvania

The last cultivation of corn planted in contour strips.

COVER CROPS IN CORN

Where corn ground is not to go into winter grain, sowing a cover crop is always desirable. If successful it covers the soil and reduces winter washing and the leaching out of plant food. It also adds organic matter through its top and root growth and helps maintain soil condition. The cheapest, surest, and most generally satisfactory cover crop is domestic ryegrass sown at about 20 pounds to the acre. If sown before or right after the last cultivation, before the season normally becomes too dry, a good stand generally is secured. A cover crop is particularly valuable on washy slopes and where corn is to be followed by corn or potatoes.

WHERE WILL IT WORK? – NORTHERN CORN BELT

- Not widely adopted yet
- But innovators have been steadily increasing usage
- Quebec – acres > since 2009
- Research – **Penn State,** U of Wisconsin, U of Minnesota, Ohio State, Michigan State, Iowa State, N&S Dakota

INTERSEEDING PRINCIPALS

- Short residual herbicide program required
- Seed between V4 –V6 (6-10" tall)
- Covers grow 6-8" in height and go "semi-dormant" as
- Covers start growing again when corn dries down and more sunlight reaches the covers
- **NO YIELD DRAG** and occasionally a small yield bump.
- Improved weed control – observation
- Allows one to seed covers that need started before harvest (which increases diversity)

RESIDUAL HERBICIDES

- Used in many of our major crops
- Usually soil applied – but not always
- Generally provide 8 to 12 weeks of weed control
- If Half-life too short - lack of residual weed control (performance reduced)
- If Half life too long - carryover to following crop
- Interseeded cover crops are particularly vulnerable

HERBICIDE PERSISTENCE

- **Half-life**: the amount of time needed to degrade half of the herbicide present.

	50%	25%	12.5%	6%
2,4-D	1 day	14 days	28 days	35 days
Atrazine	60 days	120 days	180 days	240 days

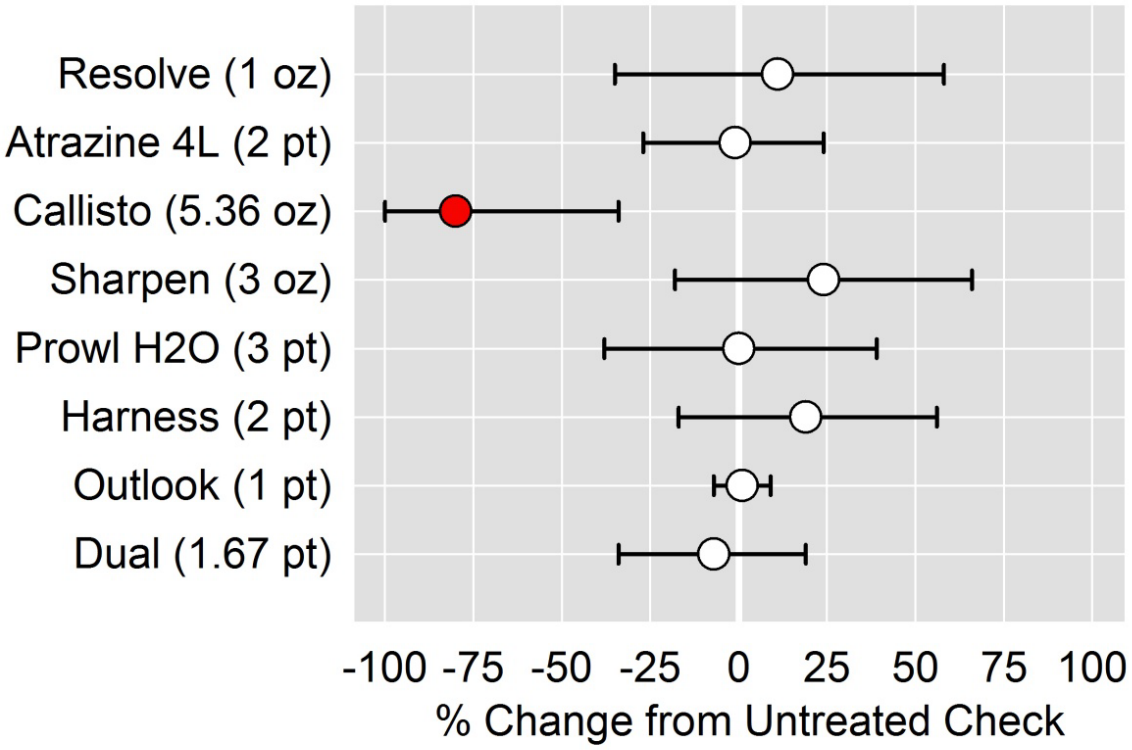
GRASS HERBICIDES: RISK OF INTERSEEDED COVER CROP INJURY

	A. ryegrass	R Clover	Annual Ryegrass RedClover
• Dual II Mag 7.64 EC 1.67 pt IX	NO	Maybe	NO
• Zidua 85 WG 2.5 oz 1X	NO	Maybe	NO
• Outlook 6 EC ½ pt ½	OK	OK	OK
• Outlook 6 EC 1 pt	Maybe	OK	Maybe
• Harness 7 EC 1 pt ½X PRE	OK	OK	OK
• Harness 7 EC 2 pt 1X PRE	Maybe	OK	Maybe
• Prowl H2O 3.8 CS 1.5 ½X PRE	OK	OK	OK
• Prowl H2O 3.8 CS 3 pt 1X PRE	NO	Maybe	NO

Potential High Risk Products

- ~ containing Dual: Acuron, Bicep/Cinch, Camix, Expert, Halex GT, Lumax/Lexar, Zemax
- ~ containing Zidua: Anthem

RED CLOVER


Resolve (1 oz)
Atrazine 4L (2 pt)
Callisto (5.36 oz)
Sharpen (3 oz)
Prowl H2O (3 pt)
Harness (2 pt)
Outlook (1 pt)
Dual (1.67 pt)
-100 -75 -50 -25 0 25 50 75 100
% Change from Untreated Check

BROADLEAF HERBICIDES: RISK OF INTERSEEDED COVER CROP INJURY

	A. ryegrass	R Clover	A Ryegrass & C Clover
• Resolve 25 DF 0.5 oz ½X	OK	OK	OK
• Resolve 25 DF 1 oz 1X	OK	OK	OK
• Atrazine 1 pt ½X	OK	Maybe	Maybe
• Atrazine 2 pt 1X	Maybe	Maybe	Maybe
• Atrazine 3 pt 1½X	NO	NO	NO
• Metribuzin 4 oz 1X	NO	OK	Maybe
• Sharpen 1.5 fl oz ½X PRE	OK	OK	OK
• Sharpen 3 fl oz 1X PRE	Maybe	Maybe	Maybe
• Balance Flex 2 SC 5.3 fl oz 1X PRE	Maybe	Maybe	Maybe

HIGH RISK: Callisto 4 SC 5.4 fl oz 1X PRE~ containing Callisto: Acuron, Camix, Halex GT, Instigate, Lumax/Lexar, Realm Q, Revulin, Resicore, Zemax containing >1.5 lb atrazine: Expert, Bicep/Cinch Magnu

CROP CROP INTERSEEDING OPTIONS

Winners

- Annual Ryegrass
- Crimson Clover
- Berseen clover
- Diakon radish
- Medium red clover
- Hairy vetch
- Rapeseed
- Turnip
- Cowpea

Maybe? - in Northern Cornbelt

- Cereal rye
- Oats

SEEDING TECHNIQUES

- Hand seeding

SEEDING EQUIPMENT

-Seeding covers while side-dressing N

INTERSEEDING COVERS

IOWA

INTERSEEDING - ROTARY HOE WITH LINEAR SEEDER

INTERSEEDING TECHNIQUES

High clearance seeder

INTERSEEDING COVERS - WISCONSIN

INTERSEEDER DRILL – PENN STATE

INTERSEEDER DRILL –
BZ MANUFACTURING

BEST OPPORTUNITIES

- Corn < 36,000 population
- Corn >36,000 population use upright leaf
- N-S rows allow more sunlight between the rows than E-W rows
- Corn < 7 feet tall

AMBIENT LIGHT

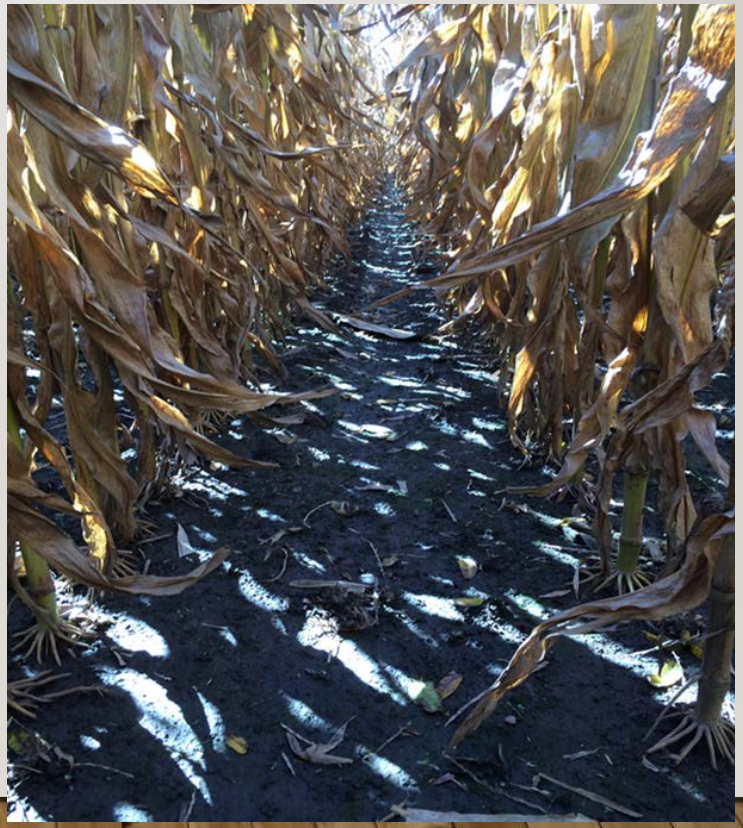
- N-S rows 17% more light than E-W rows
- 24K vs 30K – 28% less ambient light N-S rows
- 30K vs 35K – 14% less ambient light N-S rows

- 24K vs 30K – 19% less ambient light E-W rows
- 30K vs 35K - 7% less ambient light E-W rows

INTERSEEDING POTENTIAL ISSUE

CORN POPULATION >35K WITH HORIZONTAL LEAF ARCHITECTURE

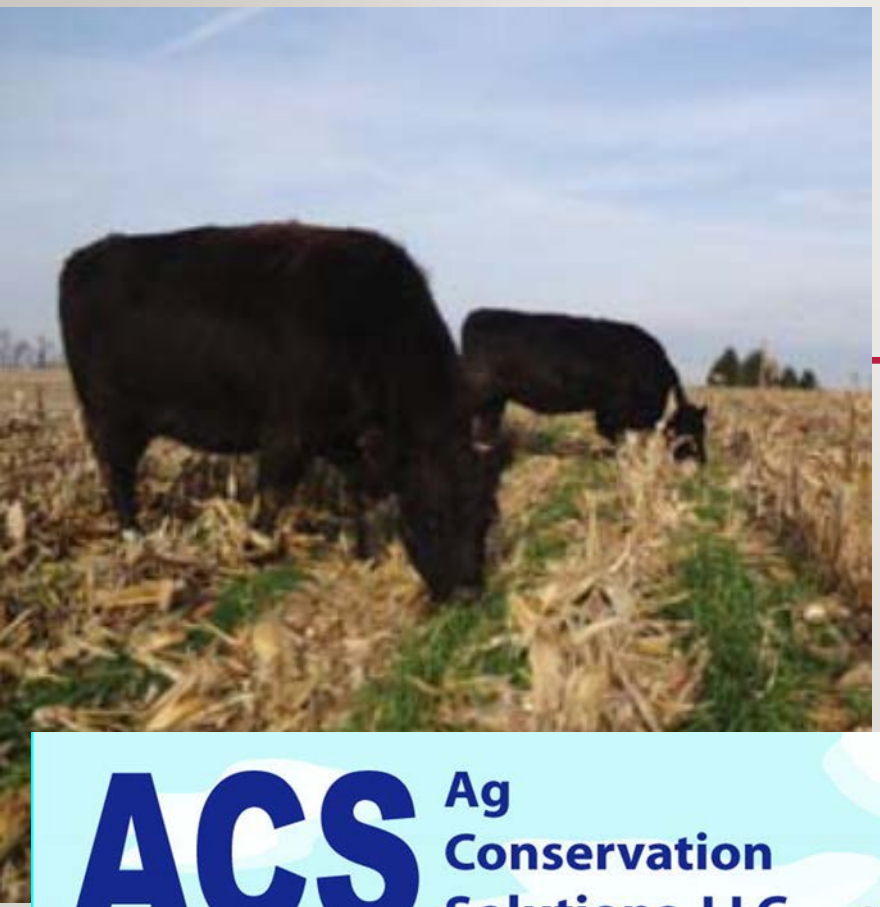
TOO MUCH SHADE



INTERSEEDING RESULTS
EARLY NOVEMBER

ADDITIONAL RESOURCES

- https://extension.psu.edu/cover-crop-interseeder-and-applicator
- htpps://extension.psu.edu/cover-crop-interseeder-improving-the-successin-corn
- http://ipcm.wisc.edu/blog/2017/05/considerations-for-2017-cover-crop-interseeding/



ACS Ag Conservation Solutions, LLC

Dan Towery
Ag Consultant

2632 North 9th Street
Suite D
Lafayette, IN 47904

765-490-0197
(fax) 765-429-4301

dan@agconservationsolutions.com
www.agconservationsolutions.com

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