



MSU Extension Crops Newsletter for Northwest Michigan

July 2014

Dear Northwest Michigan Crop Producer,

Hopefully rainfall is finding your farm. Though it seems like spring just arrived the calendar says it is almost mid-July. Crops with rainfall have progressed nicely and corn in some regions may actually have a chance of making shelling corn. Depends on what Mother Nature deals us from here on.

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Custom Hay Rates

Here are latest rates for custom work for haying operations from the MSU Custom Harvest Fact Sheet. For the latest info on all agricultural custom rates go to https://www.msu.edu/user/steind/Fin_2014%20Cust_MachineWrk_May2014.pdf

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Agriculture and Natural Resources
Children, Youth and Families /4-H
Community and
Economic Development
Family Nutrition Program

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Extension programs and
materials are open to all
without regard to race, color,
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gender identity, religion, age,
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political beliefs, sexual
orientation, marital status and
family status or veteran sta-
tus.*

*Michigan State University,
U.S. Department of
Agriculture and counties
cooperating.*

<u>Operation</u>		<u>Avg. Rate per Acre</u>
Mowing/conditioning	9 ft.	\$15.55
	12 ft.	\$14.99
	16 ft. self propelled	\$16.13
Raking		\$ 8.00
Tedding		\$ 6.27
		<u>Avg. per Bale</u>
Baling small square bale		\$ 0.82
Baling big round bale (600 -800 lbs)		\$ 9.00
Baling big round bale (1,200 – 1,500)		\$11.23
Baling large square bales 4x3x6		\$10.58
Baling large square bales 4x3x8		\$13.98

Inside this issue:

Where is Your Rainwater Going?	2
USDA Meeting Near McBain Will Provide Insight	
Foliar Fertilizer Applications to Soybeans are Rarely Profitable	3
Osceola County 2014 Soil Health Summer Series	4
Ag Expo	5
Buying Standing Hay Crops in 2014	6-7
Weed Response to Postmergence Herbicides in Corn	8



Where is Your Rainwater Going?

USDA Meeting Near McBain Will Provide Insight

All growers of plants whether they be crop farmers, gardeners, fruit producers, or golf course managers know the importance of regular rainfall in the summer season. After ten days without rain most are eagerly watching the weather maps hoping the next rain event comes their way. When rain does arrive most cannot wait to check their rain gauge to see how much rainfall was actually received. That bit of information often becomes a popular piece of conversation with other growers for the next few days.

As interested and in-tune growers are to the rainfall amounts that fell from the sky, most do not have a clue how much water actually infiltrated their soil and was retained for plant growth. Soils vary tremendously in their ability to take in water and to hold moisture for plant growth. Some take it in readily and other soils cause a large portion to flow over the surface causing soil and nutrient erosion leading to surface water contamination and flooding. Some of this is related to the type of soil, whether it is a sand, loam or clay soil, which cannot be changed, but part of it is dependent upon how the landowner manages the soil. Maintaining a residue cover of plant material, both living and/or dead plant parts on the soil surface reduces water runoff allowing it to linger longer on the soil and hopefully enter the soil. Maintaining adequate levels of organic matter in the soil, which commonly come from dead plant materials and animal manures also improves rainfall infiltration. Tilling the soil clean on the surface reduces this ability to slow and trap rainfall. It comes as a surprise to many growers that tilled soils do not serve as a good avenue for rainfall to enter the soil and benefit the growing plants.

To demonstrate this water movement the United States Department of Agriculture agencies of the Natural Resources and Conservation Service and MSU Extension will hold a segment of their Soil Health Summer Series in Osceola County on **Monday, July 14 from 7:00 – 9:00 P.M. at the Veddler Dairy Farm, at 7217 County Line Road, one mile southwest of McBain.** Paul Gross, MSU Extension Field Crops and Cover Crop Educator will be the featured speaker. He will be demonstrating a rainfall simulator showing how rainfall infiltrates different cropping and tillage soil systems. “If farmers and other landowners have never seen a rainfall simulator in action they need to come to this event – they will be amazed at what they learn,” says Jerry Lindquist, MSU Extension Field Crop and Grazing Educator. “Anyone who is interested in improving soil health for plant growth and at the same time improving and protecting water quality needs to see this” Lindquist adds.

The event is free and open to everyone. No reservations are required. The Osceola County Farm Bureau will be serving ice cream at the conclusion of the event. For more information call MSU Extension office at 231-832-6139 or the NRCS office at 231-832-2950. USDA programs are open to all people.



Foliar Fertilizer Applications to Soybeans are Rarely Profitable

This article summarizes the results from the soybean foliar fertilizer trials conducted in Michigan over the past five years. Applying foliar fertilizers to soybeans is not recommended.

Mike Staton, Michigan State University Extension

There continues to be interest in applying foliar fertilizers to soybeans. This is true even though foliar fertilization has produced mixed results in hundreds of university trials conducted across the United States. This article summarizes the results from on-farm soybean foliar fertilizer trials conducted in Michigan over the past five years. The research was conducted by the [Soybean Management and Research Technology \(SMaRT\)](#) project, a partnership between [Michigan State University Extension](#) and the [Michigan Soybean Promotion Committee](#).

The effects of five foliar fertilizers (3-16-16, 3-18-18, 26-0-0, various boron carriers and manganese sulfate monohydrate) on soybean yields has been evaluated in on-farm replicated trials in Michigan. The 3-16-16 was evaluated at 27 locations and the 3-18-18 was evaluated at 24 locations in 2009 and 2010. Both products were applied at R1 and again at R3. All of the 3-16-16 applications also contained trace amounts of micronutrients and the second application of 3-16-16 contained sugar to improve nutrient uptake. The 3-16-16 and the 3-18-18 foliar fertilizer treatments were less profitable than the untreated control treatment when all locations were combined and analyzed.

The 26-0-0 foliar fertilizer was evaluated at 18 locations in 2011 and 2012. One gallon of 26-0-0 per acre was applied between R2 and R4. Again, when all 18 locations were combined and analyzed, the foliar fertilizer treatment was less profitable than the untreated control treatment.

Various boron fertilizers were compared to an untreated control at six locations. The trials were conducted on potentially responsive sites and the boron was applied at 0.25 lb. of actual boron per acre at R1. The foliar boron treatments did not increase soybean yields compared to the untreated control.

Two trials evaluating the effects of manganese foliar fertilizer applications on soybean yields were conducted in 2013. The first trial compared manganese sulfate monohydrate fertilizer to a popular EDTA chelate manganese fertilizer at two highly responsive sites (muck soils). The manganese sulfate monohydrate increased soybean yields by 1.9 bushels per acre and income by 23 dollars per acre over the EDTA chelate. The second on-farm research trial evaluated the effect of applying a manganese foliar fertilizer to soybeans without visible manganese deficiency symptoms. This trial was conducted at two potentially responsive sites (lakebed soils with pH levels of 7.4). The trial results confirmed that manganese foliar fertilizer applications made in the absence of visible deficiency symptoms will not increase soybean yields. In fact, research conducted by the [Ohio State University](#) in 2008 and 2009 showed that foliar applications of manganese fertilizer in the absence of foliar deficiency symptoms actually reduced soybean yields.

Due to the low probability of realizing an economic return, applying foliar fertilizers to soybeans is not recommended by [Michigan State University Extension](#). *The exception to this is foliar applications of manganese fertilizer when manganese deficiency symptoms are visible.* Please see the MSU Extension news article on [identifying and correcting manganese deficiency in soybeans](#) for more information.

This article was produced by the SMaRT project (Soybean Management and Research Technology). The SMaRT project was developed to help Michigan producers increase soybean yields and farm profitability. SMaRT is a partnership between MSU Extension and the [Michigan Soybean Checkoff program](#).

This article was published by [Michigan State University Extension](#). For more information, visit <http://www.msue.msu.edu>. To contact an expert in your area, visit <http://expert.msue.msu.edu>, or call 888-MSUE4MI (888-678-3464).

Osceola County 2014 Soil Health Summer Series



Come take a look at how cover crops are being used to improve farm soils & productivity!

July 1—B&B Farms (Dan & Bonnie Blackledge), 9775 Haskell Lake Road, Marion—utilizing fall cover crops after canola harvest, soil health measurements, canola oil processing demo, ice cream sundaes, 7-9 p.m.

July 14—Veddler Dairy Farm - North Farm, 7217 County Line Road, Marion—rain fall simulator showing how tillage & plant cover impacts soil erosion & water infiltration, cover crop seed availability, minimum tillage farming practices, overseeding into corn, EQIP, ice cream sundaes, 7-9 p.m.

August 22—Jernstadt Dairy, 20310 Coolidge Road, Big Rapids—hands on look at the effects of 4 different types of tillage on cover crop plantings, lunch provided, 9 a.m. to 3 p.m.

September 23—Thornton's, 11315 E. 64th, Reed City—ACEP-WRE (WRP), cover crop interseeding in grain crops, ice cream sundaes, 1:30-3:30 p.m.

October 9—Michele & Chad Nicklas, 16134 Schofield Rd., Hersey—cover crops mixes for extending the fall grazing season of beef cattle, aerial seeding of cover crops into standing grain crops, cider & doughnuts, 6-8 p.m.

October 21—Norman's Vegetable Farms, 22735 20 Mile Road, Tustin—utilizing cover crops as a living mulch in mixed vegetable production, cider & doughnuts, 4:30-6:30 p.m.

At each farm we will be going into the field to see cover crops close up. Cover crops improve overall soil health by acting as a living mulch and reducing weeds, disease, and inputs. MSU Extension, NRCS and MAEAP will be on hand for discussions about the benefits of cover crops and programs available. These tours are financed in part by the Michigan Farm Bureau. All meetings are MAEAP Phase 1 qualified.

If you have any questions, please call us! At the Osceola-Lake Conservation District—231-832-2950

Or MSU Extension—231-832-6139



If you need an accommodation to participate, please contact Greg White at 231-832-5341 or at: greg.white@nrcs.usda.gov at least 2 weeks ahead of any meeting that you wish to attend. NRCS is an Equal Opportunity Provider and Employer.



The 2014 Official Show Guide has been released. This guide will provide you with everything you need to know about this year's show, including driving directions, a detailed event schedule, the listing of vendors and much more. You can also click here to view a map of the show grounds.

Michigan State University's (MSU's) 2014 Ag Expo is your summer time opportunity to come to campus and to experience the latest technology in agricultural production and current research findings from the faculty at the College of Agriculture and Natural Resources (CANR), MSU AgBioResearch scientists and MSU Extension educators, in areas that include food production, energy and the environment.

For Michigan residents, this is your land grant university at it finest, providing you with an amazing offering of resources to help you with life's challenges and your dreams for the future. We offer an array of resources that ultimately help to move the people of this great state forward.

More than 200 exhibitors are excited for the opportunity to show you their innovations in products and services. Innovations that help Michigan producers succeed. You will see the latest tractor models, seed varieties, sprayers and dairy equipment all in one place.

Enjoy a full schedule of demonstrations and educational session to help you manage your farms and businesses. Demonstrations on grain bin and auger safety, stock dog handling, mortality composting and equine and pasture management are planned.

Educational sessions include using an unmanned aerial vehicle, (Drone) as the key to unlocking untapped potential in agriculture, soil management, Farm Bill updates, SMART Gardening tips and more.

Thank you for making the trip to Michigan State University to experience all we have to offer. We know you will be pleased with this year's Expo. Enjoy the Show!



****NEW SHOW HOURS FOR 2014****

Tuesday & Wednesday, 7:30 a.m. - 3:30 p.m.

Thursday, 7:30 a.m. - 3:00 p.m.

****See the Schedule for a full itinerary of activities and events online at: <http://agexpo.msu.edu/>**

Buying Standing Hay Crops in 2014

Considerations for establishing a fair price between buyers and sellers.

Jerry Lindquist, and Phil Kaatz, Michigan State University Extension

Hay crops remain a hot commodity across the Midwest. Each year some landowners are approached by local farmers wanting to buy and harvest a standing crop of hay. The challenge then becomes how to price the standing hay crop with annual fluctuations of hay markets and changing input costs such as fuel, labor, the value of equipment and repairs to name a few. As land and crop prices have increased in value over the last five years, hay prices have also increased and thus the value of a standing crop of hay may be significantly higher than what was paid in the past.

Below are examples from [Michigan State University Extension](#) for both alfalfa (dairy quality hay) and alfalfa/grass (livestock quality hay) using a formula that considers the buyers harvesting costs and the landowners costs to grow the crop, and then negotiating a final price for the crop between these two. This is done by estimating the yield and value of the expected hay crop less the growing costs of the landowner which provides a minimum asking price compared to the maximum pay price of the buyer which also projects the total hay value less the buyer's harvesting costs and a cost for assuming the risk of weather damaged caused by rainfall on the mowed crop.

Alfalfa field (dairy quality hay)

Equation: estimated 4 tons per acre yield of 16 percent moisture hay at \$200 per ton = \$800 per acre value for all three cuttings; minus buyer's cost of harvest and weather risk at \$324 per acre assuming three cuttings (table 1); equals the buyer's maximum pay price: \$476 per acre for three cuttings (\$800 - \$324 = \$476).

Mowing 3 cuttings, raking 1 cutting	\$54
Baling 8.9 bales per acre	\$106
Bale hauling	\$24
Weather risk (15% of hay value)	\$120
Dry matter handling loss (2% of crop value)	\$16
Other costs	\$4
Total Harvest Costs	\$324

Table 1. Buyer costs/acre for three cuttings of alfalfa hay

The landowner's acceptable minimum price incorporates all land and production costs and does vary geographically across the state of Michigan. Land values and rental rates are approximately double in southern Michigan compared to northern Michigan. To learn what the land values and leasing rates are for your region you can go to: [2013 Michigan Land Values and Leasing Rates](#). In southern Michigan, the landowner costs might be \$375 per acre for all three cuttings (Table 2). In northern Michigan, the landowner costs will be lower around \$304 per acre. In addition to land cost, this minimum price will also cover the landowner's annual cost of fertilizer, property taxes and the cost of the hay stand establishment prorated over the life of the stand (Table 2).

	Alfalfa		Alfalfa/grass	
Fertilizer topdress	\$120		\$90	
Seeding costs (\$330 per acre)	\$83	(4 yrs)	\$33	(10 yrs)
Taxes and insurance	\$30		\$20	
Land costs	\$142	\$71*	\$142	\$71*
Total Landowner costs	\$375	(\$304)	\$285	(\$214)
(minimum price)	* Northern MI land cost			

Table 2. Landowner costs/acre for the season

A number somewhere between the buyer's maximum price of \$476 and the landowner's minimum price of \$375 in Southern Michigan (Table 2) may provide a fair price for both parties. This negotiated price between the max and min may be the median average of \$426 per acre. If so, it can be broken down per cutting to: \$191 per acre for the first cutting; \$150 per acre for the second cutting; and \$85 per acre for the third cutting using average cutting yield percentages of 45:35:20 respectively.

Now let's look at an alfalfa/grass mixed hay field that has less yield and value but also fewer input costs.

Alfalfa/grass mixed field (livestock quality hay)

Equation: 3.0 tons per acre at \$130 per ton = \$390 per acre of hay value for two cuttings; minus buyer's cost of harvest and risk \$184 per acre for two cuttings (table 3); equals buyer's maximum pay price of \$206 per acre for two cuttings (\$390 - \$184 = \$206)

The landowner's minimum price to accept may be \$214 per acre for the two cuttings for Northern Michigan (Table 2 alfalfa/grass). This minimum price will cover the landowner's annual cost of fertilizer, property taxes, and pro-rated annual cost of hay stand establishment assuming a ten year life for these stands with more grass. If the buyer pays the landowner's minimum price of \$214 per acre, they must hope the yield will be larger than the estimated 3.0 ton per acre as the price is more than their suggested maximum price to pay of \$206. If they come to an agreement and the negotiated price is \$210 per acre, the per cutting price for first cutting would be \$140 per acre and for second cutting would be \$70 per acre, using average cutting yield percentages of 66:34 respectively. This example points out that with today's higher costs of production, hay yields of 3 tons or less per acre may not always be a profitable venture for either party. Proper rotation and establishment of new hay stands is advised for low yielding stands.

Mowing 2 cuttings, raking 1 cutting	\$36
Baling 6.7 bales per acre	\$80
Bale hauling	\$18
Weather risk (10 percent of hay value)	\$39
Dry matter handling loss (2 percent of crop value)	\$8
Other costs	\$3
Total Harvest Costs	\$184

Table 3. Buyer costs/acre for two cuttings of alfalfa/grass hay

Rather than estimating the yield of hay at the beginning of the season, it can be more accurate to agree on a percentage split and the pay price of the forage at the beginning of the season. Following harvest, the forage yield is counted, calculated and payment is made accordingly at the end.

As an example for alfalfa hay using the first example above on a bale or ton basis, if the buyer provides all the harvesting cost and assumes the risks of harvest, then a split of the harvested crop would be approximately 53 percent of the crop, or its value, going to the landowner and 47 percent going to the buyer (negotiated fair price to charge of \$426 per acre divided by the total estimated value of \$800 = 0.53). If the buyer makes a round bale weighing 900 pounds and the two parties agree to price all hay at \$200 per ton, then each bale should be worth \$90 per bale (900/2000=0.45; then 0.45 X \$200=\$90) and the 53/47 split would then pay the landowner \$48 for each bale produced (\$90 X 0.53=\$48). This example is assuming the landowner is paying the cost of soil nutrient replacement with fertilizer or other soil amendments. In today's market this 53/47 split can apply to alfalfa/grass hay agreements as well but, of course using different hay values and costs of production.

These are only hypothetical examples of yields, market values and production cost estimates. All parties are encouraged to calculate their own costs and then to agree upon a local market value and the eventual pay price. To assist in more accurately estimating a pricing agreement, go to [Pricing Standing Forage Worksheet](#) by the University of Wisconsin-Extension Forage Team.

In today's high value hay markets the fair purchase price of a standing hay crop has increased. Some old agreements of pricing the crop on values that were set in the past may not be accurate. For more information contact MSU Extension Forage Team members Kim Cassida at 517-355-0271 orcassida@msu.edu; Phil Kaatz at 810-667-0341 or kaatz@anr.msu.edu; or me at 231-832-6139 orlindquis@anr.msu.edu.

This article was published by [Michigan State University Extension](#). For more information, visit <http://www.msue.msu.edu>. To contact an expert in your area, visit <http://expert.msue.msu.edu>, or call 888-MSUE4MI (888-678-3464).

TABLE 1B – Weed Response to Postemergence Herbicides in Corn*

Postemergence	SITE OF ACTION	CORN TOLERANCE**	ANNUAL BROADLEAVES										ANNUAL GRASSES							PERENNIALS							
			COCKLEBUR	JIMSONWEED	LAMBSQUARTERS	T-R LAMBSQUARTERS ^a	NIGHTSHADE (E. BLACK)	PIGWEEED	RAGWEED (COMMON)	RAGWEED (GIANT)	SMARTWEED	VELVETLEAF	WILD MUSTARD	BARNYARDGRASS	CRABGRASS	GIANT FOXTAIL	GREEN FOXTAIL	YELLOW FOXTAIL	FALL PANICUM	WITCHGRASS	SANDBUR	CANADA THISTLE	QUACKGRASS	YELLOW NUTSEDGE	JOHNSONGRASS (seedling)	JOHNSONGRASS (Rhizome)	
2,4-D	4	3	G	F	G	G	G	G	G	P	F	G	N	N	N	N	N	N	N	N	N	F	N	N	N	N	
ACCENT Q	2	2	F	G	F	F	P	E	P	N	G	F	P	E	P	E	E	E	E	E	E	G	F	G	F	E	G
AIM	14	3	P	F	F	F	G	G	P	P	P	E	F	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ARMEZON/IMPACT	27	1	G	E	E	E	E	E	E	G	G	E	G	G	E	G	G	G	G	G	F	F	P	P	F	P	
ATRAZINE	5	1	G	G	E	N	G	E	E	G	E	F	E	F	P	F	F	P	P	P	F	F	F	F	N	N	
BANVEL/CLARITY	4	3	G	G	G	G	G	G	G	E	E	F	G	N	N	N	N	N	N	N	N	F	N	N	N	N	
BASAGRAN	6	1	E	G	F	F	P	P	F	P	G	F	E	N	N	N	N	N	N	N	N	G	N	G	N	N	
BEACON	2	2	E	G	F	F	G	E	E	E	G	G	F	P	P	F	F	F	G	G	F	F	G	F	G	F	
BUCTRIL/MOXY	6	2	G	G	E	E	G	F	G	G	G	G	F	N	N	N	N	N	N	N	N	P	N	N	N	N	
CADET	14	2	P	F	F	F	F	G	P	P	P	E	P	N	N	N	N	N	N	N	N	N	N	N	N	N	
CALLISTO	27	1	F	E	E	E	E	G	G	G	E	E	E	N	^b	N	N	N	N	N	N	P	N	P	N	N	
LAUDIS	27	1	G	E	E	E	E	E	G	G	E	F	G	G	F	G	P	E	P	F	F	P	P	F	P	P	
OPTION	2	2	F	G	F	F	G	E	F	P	P	F	G	E	P	G	G	G	G	G	F	F	G	F	E	G	
PERMIT	2	1	E	G	N	N	P	E	G	G	F	G	E	N	N	N	N	N	N	N	N	P	N	E	N	N	
RESOURCE	14	2	P	P	F	F	P	P	P	P	P	E	P	N	N	N	N	N	N	N	N	N	N	N	N	N	
STINGER	4	1	E	G	P	P	F	P	E	E	F	P	P	N	N	N	N	N	N	N	N	E	N	N	N	N	
Premixes																											
ANTHEM	15/14	2	P	F	F	F	F	G	P	P	P	E	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ANTHEM ATZ	15/14/5	2	G	G	E	F	G	E	E	G	G	E	E	F	P	F	F	F	P	P	P	F	F	F	N	N	
CALLISTO XTRA	5/27	1	G	E	E	E	E	E	E	G	E	E	G	N	^b	N	N	N	N	N	N	F	N	P	N	N	
CAPRENO	2/27	2	G	E	G	G	E	E	G	G	E	E	G	G	G	G	E	G	G	F	P	P	P	G	G		
HORNET WDG	2/4	2	E	F	F	F	F	P	E	E	G	G	G	N	N	N	N	N	N	N	E	N	N	N	N	N	
MARKSMAN	4/5	3	G	G	E	G	G	E	E	E	E	G	E	P	N	P	P	P	N	N	N	F	P	F	N	N	
NORTHSTAR	2/4	2	E	G	G	G	G	E	E	E	G	F	G	P	P	F	F	F	G	G	F	F	G	F	G	F	
REALM Q	2/27	2	G	E	E	E	E	E	G	F	E	E	E	G	F	G	G	G	G	G	P	F	F	P	F	N	
REQUIRE Q	2/4	2	G	G	G	G	G	E	G	G	F	F	G	G	F	G	G	G	G	G	P	F	F	P	F	N	
RESOLVE Q	2/2	2	G	P	G	G	F	E	F	P	G	F	E	G	F	G	G	G	G	G	P	F	F	P	F	N	
SHOTGUN	5/4	3	G	E	G	G	E	E	G	E	F	E	N	N	N	N	N	N	N	N	F	N	N	N	N	N	
STATUS	4/19	2	E	G	E	E	G	E	E	E	E	G	G	P	P	P	P	P	P	P	P	G	N	N	N	N	
STEADFAST Q	2/2	2	F	G	F	F	P	E	P	N	G	F	G	E	F	E	E	E	E	E	G	F	G	F	E	G	
YUKON	2/4	2	E	G	G	G	G	E	G	G	G	G	E	N	N	N	N	N	N	N	N	P	N	E	N	N	
Glyphosate-Resistant Corn																											
GLYPHOSATE	9	1	E	E	G	G	G	E	G	G	G	G	E	E	E	E	E	E	E	E	E	G	E	F	E	E	
CALLISTO GT	9/27	1	E	E	E	E	E	E	G	G	E	E	E	E	E	E	E	E	E	E	E	G	E	F	E	E	
EXPERT	5/9/15	2	E	E	E	G	G	E	E	G	G	G	E	E	E	E	E	E	E	E	E	G	E	F	E	E	
FIELD MASTER	5/9/15	2	E	E	E	G	G	E	G	F	F	F	E	E	E	E	E	E	E	E	E	F	G	F	E	G	
HALEX GT	9/15/27	1	E	E	E	E	E	E	G	G	E	E	E	E	E	E	E	E	E	E	E	G	E	F	E	E	
SEQUENCE	9/15	1	E	E	G	G	E	E	G	G	G	G	E	E	E	E	E	E	E	E	E	G	E	F	E	E	
WARRANT + GLYPHOSATE	9/15	1	E	E	G	G	E	E	G	G	G	G	E	E	E	E	E	E	E	E	E	G	E	F	E	E	
LibertyLink Corn																											
LIBERTY	10	1	E	G	F	F	G	G	E	G	G	G	E	F	F	G	G	F	F	F	P	P	P	P	G	F	

Herbicide Site of Action: The site of action key is located on pages 16-17.
 Herbicide Effectiveness: P = Poor; F = Fair; G = Good; E = Excellent; N = None; - = Not enough information to rank
 *The above ratings are a relative comparison of herbicide effectiveness. Weather conditions greatly influence the herbicide's effectiveness, and weed control may be better under favorable conditions or poorer under unfavorable conditions.
 **Crop Tolerance: 1=Minimal risk of crop injury; 2=Crop injury can occur under certain conditions; 3=Severe crop injury can occur. Follow precautions under Remarks and Limitations and on the label; 4=Risk of severe crop injury is high.
^a Triazine-resistant common lambsquarters.
^b Large crabgrass only.

For a free copy of the 187 page 2014 MSU Field Crop Weed Control Guide go to
<http://www.msuweeds.com/assets/2014-WeedGuide/2014WGcorn.pdf>

Osceola County MSU Extension

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