Great Lakes Grazing Newsletter

MICHIGAN STATE UNIVERSITY | Extension

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Volume 5, Issue 2

May 2016

Dear Great Lakes Grazer,

Let the Grazing Begin! Grass is green and across the Great State of Michigan grazing animals are, or will shortly be turned out to pasture. Much is written about when to officially turn the herd or flock out on pasture for example "when the Growing Degree Days base 32 F accumulation as of March 1 reaches 500 units" or "when the cool season grass plants produce 3 leaves" or "when dandelion blossoms start appearing in pastures". These and many other guidelines can be used as predictors for when to start but of course should not be considered absolutes. For example it appears we have had an earlier than normal spring and in the Northern Lower Peninsula the growing degrees units went over the 500 mark around April 28. Also some orchard grass plants are showing their third leaf so maybe grazing can commence a little earlier this spring. But there is so much more to be considered before you swing the gate open. The veteran grazers will know these guidelines but let me bore them for the sake of the beginners that may be reading this:

1. Is the soil moisture and thus the sod dry enough to not cause excessive hoof damage – hopefully you have the low, wet paddocks fenced out for later grazing in drier weather but there is little sense to destroy sod even on the drier paddocks by starting too soon, especially in a year like this when many farms are carrying over significant quantities of winter feed.
2. Is the average pasture plant ready for grazing; have the leaves grown enough to convert solar energy into plant root reserves and replenished those lower winter levels? North Dakota research suggests that beginning to graze pasture too early in the spring can reduce plant vigor and thus may reduce total pasture production for the year by 50% or more! Normally we recommend that average pasture height be 8" in the summer before it is grazed. For 1st turn in of the spring we strategize that turning in a little sooner than this is justified, say maybe 6" because in the upcoming explosive growth period of May 15 – June 15, if you do not start grazing a little early on good productive pastures the grazing herd will have a hard time keeping up and over mature pasture forage will be the result.
3. Does your schedule over the next 2-3 days provide you a little more time to shepherd the flock or herd? If animals are going to get out, bloat, or do something else to demand your immediate attention, usually

Inside this issue:

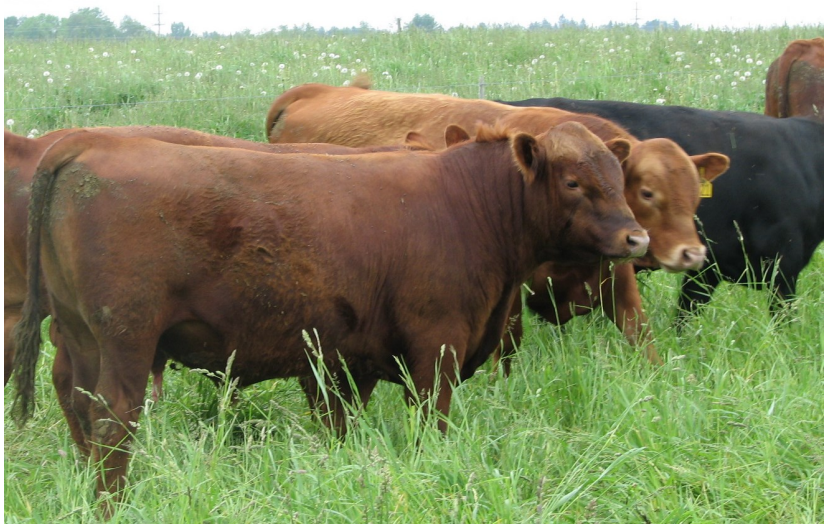
it will happen within the first 2-3 days of turn out to a new pasture. Young, new born animals especially are on a big learning curve when turned into their first new pasture. Time your turn out accordingly so your schedule allows you to be around.

4. If any paddock or fields were stockpiled or rested longer last fall try to graze them first as the plants should have more vigor and root reserves than ones grazed late in the fall. Try to avoid always grazing the same field first in the spring. Topography and wet conditions described in #1 may make this impossible, but doing so will weaken that first stand from the annual early season pressure, and it may lead to more weed production in the fields that are always grazed later.
5. To keep grazing livestock safe and healthy fill them up on hay or other fibrous feeds in the morning and turn them out during the early afternoon. Hungry animals will over-consume pasture on the first day which can lead to bloat and/or other problems. And letting the dew burn off the pasture by not turning out till the afternoon makes the forage slightly drier causing the ruminant animal to produce more saliva which naturally buffers the rumen acids reducing the risks of bloat and acidosis.

Spring pasture turn out timing is not rocket science. Get the fences in good repair, the watering system in tip top shape and the livestock's belly full of feed before you open the gate for the first time and you will be off to a good start. Graze on!

Jerry Lindquist

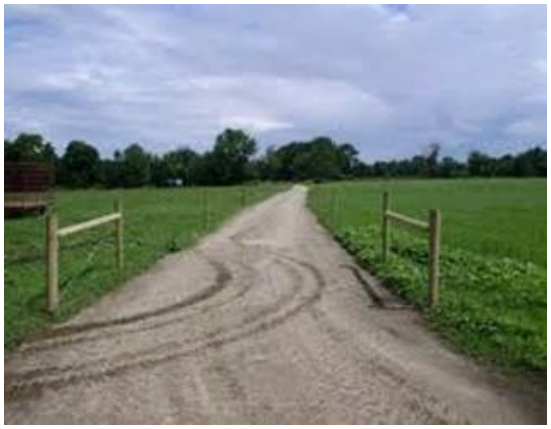
Jerry Lindquist
MSU Extension Grazing Educator



Hot Topics for the 2016 Grazing Season

Every year is different with new market conditions and weather events. Below are some of the hot topics that have received a lot of attention in my office in the last few months.

Mud If you have cattle, you predictably have at least two muddy seasons a year - early spring and late fall. These events always seem to take you the edge of saying "before next year we will do something about this" but then the weather quickly changes and either freezes up or dries out causing you to forget about it for another 5 – 6 months. Both springs of 2015 and 2016 seemed to be worse than normal for many Michigan farms causing heavy use areas for cattle and tractor travel to turn to quagmires. Research shows that mud coated feedlot cattle consume less feed, have lower weight gains, and require more feed per pound of gain during cold times of the year. Even for the cow/calf herd, mud can decrease cow body conditions leading to potentially poorer breeding seasons, can cause foot rot, and can lead to sick calves to name just a few problems. It can also lead to frost bite and other injuries to breeding stock which we believe we have seen this year (see next paragraph). If you said this summer will be the one to reduce future mud on your farm read on. Mud can be reduced a number of ways. Some improvements like concrete and roofed structures may be cost prohibitive. Earthen mounds like what are used in feedlots can be built for cow/calf operations and can be a lower cost alternative. These shaped mounds are 10 – 18' high usually 55 – 90' wide providing a slope of 1 foot of fall for every 5 foot of width. You can make them as long as you need them to provide 20 – 25 sq. ft. of area per head. For complete mound construction details go to http://gpvec.unl.edu/mud/Enviro-FeedlotMounds-ISU%2010525.pdf . Another very popular, lower cost choice is stone over top of geotextile fabric material. In muddy lots, lanes, watering areas and other high use locations the non-rotting geo textile material prevents stone from being pushed down into the subsoil where it is lost. Its price is about half the price of concrete, with a useful life of 20 – 30 years with some maintenance required including manure scraping and some stone replacement.



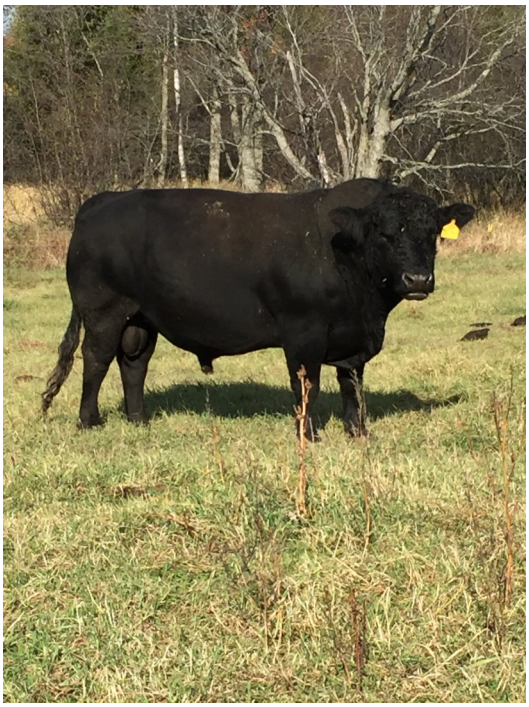
A great advantage it has over concrete is that rainfall still penetrates the stone and textile mat. Whereas concrete being impervious often has a mud hole where the concrete ends and rain runs off, geotextile does not cause this wet hole at its end (at least not because of water run-off). For more information on the use of geotextile and stone for cattle areas go to http://learningstore.uwex.edu/Lanes-That-Keep-Dairy-Animals-High-and-Dry-P1390.aspx or contact Jerry Lindquist at 231-832-6139 or lindquis@msu.edu.

Bull Fertility May Be Down – Is Mud the Cause? Preliminary testing of Michigan beef bulls by the MSU Beef Team and the MSU Vet Clinic is indicating that a larger than normal percentage of bulls are showing subpar fertility this spring. Testing continues in the U.P. but thus far almost 35% of bulls tested in the Lower Peninsula are deferred and recommended to be tested again before the breeding season begins. There can be many causes for low fertility including infections, yearling bulls not yet reaching puberty, poor nutrition, etc. but this year a number are showing frost bite/winter injury symptoms. Scrotal scabbing is an indication of frost injury that can cause lower sperm quality. The muddy milder winter may have actually been worse for wintering bulls if they got mud covered and then had temps drop to near zero. The previous two winters were so cold that mud could not be found in the middle of the winter but 2016 was warmer. Some of these bulls will recover and breed OK. Others will be subpar depending upon when they are breeding, and some will remain in-fertile. Only later testing or actual cow exposure will tell. They still will go through all the motions of mounting but conception will be lacking. What to do if you did not get your bull tested? Don't panic as each year almost 80% of the bulls in Michigan are fertile by the time breeding season rolls around. If you expose your cows to two or more bulls your odds are even better that one of the two will eventually get most of the cows breed. But if you only run one bull with a group of cows and if your bulls winter lot is outside and things got muddy this winter talk to your Veterinarian. Determine if a breeding soundness exam is still possible in your area. At the very least, something you should always do is observe and record the first few days of breeding. Write down cows that the bull is mounting and if there is more than one bull in the herd, which bull it is. Then observe those same cows 18 – 21 days later at least in the morning and night for 20 minutes or longer to determine if any are cycling back into heat. If over 25% are returning to heat you have a problem and may need a back- up bull or alternative breeding plan asap. Talk to an MSU Beef Team member or your Veterinarian for more information.

Multi Specie Cover Crop Mixes For two falls in a row, these multi specie annual crop mixes have worked very well for extending the fall grazing season. Many farms that are utilizing these 5 – 10 way mixes of oats, radishes, turnips, clover, etc., are saving $0.50 - $0.90 per cow per day when grazing them versus feeding hay in the late fall. They also are seeing some improved crop yields on grain production the next summer in the same fall grazed fields. If you raise wheat, oats or other small grains on your farm you are missing the boat if you do not try grazing a multi specie mix in the fall. If you ever renovate a hayfield or pasture you also need to try one of these mixes the fall before you seed the new field. For more info go to http://msue.anr.msu.edu/news/pasture_walk_in_osceola_county_to_view_grazing_fall_cover_crop_mixes or contact Jerry Lindquist.

Cattle Safety The reports of three farm deaths caused by cattle in last six months in the U.S. reinforces the message of being very cautious anytime when working around animals that weigh 6 – 13 times more than we do. Two of these deaths occurred in Michigan. One was a 71 hired man trying to chase a loose beef bull back inside the fence and the other was a 60 old experienced dairy farm worker helping to load out a dairy bull onto a livestock trailer. The third was a 75 year old Oklahoma rancher assisting a cow with a difficult birth. He was using obstetric chains to pull the calf and did not have the cow restrained as she was lying down. The cow got up and as she did, he became tangled in the

chains and was dragged to death. I know of another Michigan beef farmer this winter that was tossed over a corral fence by a beef bull as they were trying to load the bull on a trailer. He suffered no serious injuries and was lucky! There are no easy solutions. Having solid working facilities, fences and corrals is the best way to manage cattle without having to be a rodeo clown. Keeping a well secured gate or fence between you and the animal must be done whenever possible. Never work bulls by yourself! There is safety and wisdom in numbers. Maybe a better idea for handling them can be devise with another set of eyes and at the very least, if you are attacked there is someone there to distract the charging animal from you and to call 911 if you are seriously injured. The pet bull is the most dangerous. Some bottle fed, pasture grained, back rubbed bulls have killed their owners and are some of the most dangerous according to Dr. Temple Grandin, one of the leading authorities on cattle behavior in the world. It is because we get too close to them too often. The bull separated from its herd mates is a paranoid animal and this can make it aggressive. Load out time onto a trailer and separating from the cow herd at the end of the breeding season are times to be extremely cautious. Loading a few other cattle to be culled with the bull can be a helpful strategy. Also catching the bull in the load out pen by appealing to his appetite for food is a much more natural strategy than attempting to herd him in. And it is not just the old, ornery bull that is dangerous. Years ago an experienced dairy farmer in my hometown was killed at load out by a yearling Holstein bull that weighed just 1,300 lbs. "Good" cattle dogs can also work. Check with livestock truckers to see if they have any or know of any cattle dogs that can be hired (good ones will be priceless). But still it will take good fences and corrals with a cattle dog to keep the bull from going through the fence. Dairy farms with caged skid steers and rubber mounted scrapper tires on the front end have found these units to be a safer way to move and separate bulls on dairy farms. Getting out of the way of a charging animal is difficult even for the very fleet of foot – it happens too quickly. But it is extremely difficult for the aged farmer and we see many of the injuries and deaths occur to those over 60 years of age. If you must work cattle and are not as fast and nimble as you once were using machinery like tractors, trucks, and skid steers, etc. can be a safer method. A dent in the door is much easier to fix than one in your head! A few local beef farm have started using a calf catch cage mounted on the side of an ATV to catch new born calves for processing. They say it works surprisingly well to exclude the cow from the process. Bottom-line, think safety and plan ahead. The MSU Beef Team has handling system and corral design options to make your job safer. You are not getting younger so take some steps so you keep getting older!



$20 per person
16 & Under FREE
Lunch provided

Register Online at:
www.hillsdalecd.org
or

Mail your registration to
Hillsdale Conservation District
588 Olds Street, Building #2
Jonesville, MI 49250

Make checks payable to:
Hillsdale Conservation District

Any questions, please call the
Conservation District at:
(517)-849-9890 Ext. 3
or Email: hillsdalecd@macd.org

Name_____
Address_____
City_____ST_____Zip_____
Phone Number _____
Email _____
Total # of People Attending_____
Total $:_____

IF MAILING REGISTRATION IN: Please Circle the seminars you plan on attending and cut along dotted line, mail in with your check.

All programs and services of the NRCS and Hillsdale Conservation District are offered on a non-discriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status or disability.

Grazing & Pasture Field Day Agenda

8:30am-9:15am Registration & Vendors

9:15am Welcome & Introductions

9:30am-11:40am Farm Tour
- Farm Tour

OR

9:30am-10:30am Choose (1) Seminar
- Dr. Rowntree
- Eric Anderson
- CSI

10:40am-11:40am Choose (1) Seminar
- Dr. Karcher
- Center Seeds-Jeff Rasawehr
- Supergro-Brian Denlinger

12:00pm-1:30pm Lunch

1:40pm - 3:50pm Farm tour
- Farm Tour

OR

1:40-2:40pm Choose (1) Seminar
- Dr. Rowntree
- Ben Tirrell
- CSI

2:50pm-3:50pm Choose (1) Seminar
- Dr. Karcher
- Jeannine Schweihofer
- Supergro-Brian Denlinger

4:00pm - 5:00pm Choose (1) Seminar
- MSU Rainfall Simulator
- Local Producer Panel
- Jeff Rasawher

Hillsdale County Grazing & Pasture Field Day

Sponsored by:
Hillsdale Conservation District

Saturday June 25, 2016

Full Day of Intensive
Knowledge & Sharing
Seminars & Farm Tours

Hosted By:
Greener Grass Farms
10240 Youngs Rd
Quincy, MI 49082

Registration & Vendors Start at 8:30am

HILLSDALE CONSERVATION DISTRICT

Greener Grass Farms 100% Grass Fed Beef

www.hillsdalecd.org

Improving Soil Health

Learn from the experts on ways to improve your soil.

Eric Anderson-Extension Educator for field crops and speciality crop production, Eric will be discussing how to take soil samples, read a basic soil test, and what characteristics and nutrients are key for pastures.

Dane Terrill-Director of Sales/Marketing & Soil Consultant at Crop Services, Dane will be talking about soil biology on your farm.

Jerry Lindquist -MSU state-wide Grazing Educator & N.W. Michigan Field Crops Educator, Jerry has served as a MSUE Agricultural Educator for over 34 years. He has expertise in all aspects of forage management for beef and dairy cattle. Jerry will be demonstrating the Rainfall Simulator.

Watch the MSU Rainfall Simulator
Don't guess, soil test!

Jeff Rasawehr-Center Seeds. Jeff is a 35 year farmer resident of Birmingham, Michigan and has cover cropped for 14 years. Jeff's emphasis is on the economics of profiting from a systems approach using cover crops. His farm today is very diverse with multiple grain production and diverse forage production. He also develops diversity of livestock production.

Supergro-Brian Denlinger, and his wife Susan own SuperGro of Iowa LLC, located in Brookville, OH. Brian also works for Leon Hershberger at Cushman Creek Supply in Holton, MI as field man throughout the Midwest. They help growers be more profitable in their operations by improving their soils.

Regulations & Resources for Direct Marketing Meat

Jeannine Schweihofer-is the Meat Quality Ext Educator. She will cover regulatory requirements for marketing meat to consumers. She will also provide resources to assist producers in marketing meat.

Grazing in Hillsdale County

Producer Panel-This session will focus on the expieriences of local farmers and the quest for improved grazing techniques. There will be a Q&A session with local farmers: Bill Berry, Ron Rusk, Vernon "Shorty" Hochstetler, Steve McElroy- and moderator Elysia Rodgers.

Greener Grass Farm Tour-Choose between an AM or PM hayride farm tour. Narrated by Dan Marsh, and host of the event and Greener Grass Farms owner and local NRCS. The tour will take you around the farm looking at NRCS watering projects, soil erosion improvements and grazing methods.

Economics of Grazing

Dr. Jason Rowntree-A world renowned speaker and professor at MSU and Dirctor of Lake City Research Center. Dr. Rowntree will share his research derived from Lake City Research Center in grass finishing beef.

Rachel M. Martin- M. S., is a Graduate Assistant and 2nd year Ph. D. student at MSU in the department of Animal Sciences. Current research involves finishing beef steers in Upper Midwest on high-energy forages and the subsequent effect that forages have on beef. Her future plans include graduation from MSU with a doctorate in animal sciences and working in a job where she would specialize in grazing systems consulting.

Ben Tirrell-helps operate his family farm in Charlotte, MI together with his mother and daughters Reagan and Amelia. The family raises beef and sheep, with a focus on grazing and some direct marketing through the family's farm store. He currently works for MDARD as a verifier with the MAEAP, verifying farms in the SE part of Michigan. Ben has studied agricultural economics and crop and soil science. He is interested in helping farmers and agriculture identify sustainable systems and conserve resources in order to preserve our agricultural traditions for the future.

Dr. Darrin Karcher-is the MSU Poultry Extension Specialist. At Michigan State, Karcher has been charged with developing a strong poultry extension program and will be speaking on small farm flock production.

2016 Summer Grazing Events

Mark your calendar for these upcoming grazing events. Some of the latter events are still in the planning stages so watch for future details.

Mid Michigan Cattle Network Pasture Walk at Steve Gardner Farm Thursday, June 16, 2016, 6:00 – 9:00 P.M. 3490 Gardner Rd., Roscommon, MI. 48653. Highlights include grass-fed beef production, managed intensive grazing utilization with pasture irrigation, cover crops, baleage, Simmental/Black Angus cow herd, video cameras in calving barn and much more. Contact Kable Thurlow at 989-426-7741 for details.

Hillsdale County Grazing & Pasture Field Day Saturday, June 25th 9:00am - 5:00pm
Greener Grass Farms, 10240 Youngs Road Quincy, MI 49082. Greener Grass Farms will host the second annual Hillsdale County Grazing and Pasture Field Day on Saturday, June 25th from 9:00am to 5:00pm. Registration will begin at 8:30am, with farm tours and breakout sessions beginning at 9:30am sharp. Main topics will include Improving Soil Health, Regulations and Resources for Direct Marketing Meat, Grazing in Hillsdale County, and Economics of Grazing. A cook-out style lunch, refreshments and desert is included for this all day event! Registration is $20 each, and 16 years and under are free. Registration must be completed and returned to the Hillsdale Conservation District no later than Friday, June 10th at the office, by mail or online with the registration form below. Cash, Check, and all major Credit Cards accepted. For more information, please contact the District at (517) 849-9890 Ext. 3 or go to www.hillsdale.org

Pasture Walk at Grand Traverse Land Conservancy Farm, August 9, 2016, 6:30 – 9:00 P.M., 11593 N Manistee County Line Rd, Benzonia, MI. See the beginning improvements of managed rotational grazing, winter bale grazing and more on a grass-fed beef Belted Galloway cattle Farm. Call Jerry Lindquist at 231-832-6139 for details.

Field Day at MSU Lake City AgBioResearch Center, August 13, 2016. 9:00 A.M. – 3:00 P.M. Grass-fed beef production update with an emphasis on fencing technologies and baleage production techniques including equipment demonstrations. Call Jerry Lindquist for more details.

MSU Grazing School at MSU BioAgResearch Centers at KBS, Lake City and at Bay Mills Community College Waishkey Bay Farm in the Upper Peninsula, Sept. 22 & 23, 2016. Registration details will be out in June.

2016 Custom Machine and Work Rate Estimates

FIRM Team Fact Sheet Number 16-01
Available at http://www.firm.msue.msu.edu
Author: Dennis Stein, District Farm Business Management Educator, MSUE
Michigan State University Extension • January 2016

	2016 Production season costs		updated 01.29.16
Farm Labor Unskilled [7] = $ per hour	$12.68		
		$2.00	per gallon of fuel
Farm Labor skilled [7] = $ per hour	$16.00		
		$2.25	per gallon lube & fuel cost
Farm Labor- milking cows per hour			

TRACTORS ONLY:		max.	min.	Custom $/Hour	Machine Cost $/Hour	Est. Fuel Gal. / Hour	Est. Fuel Cost per Hour
No driver,or fuel cost	MFWD - 260 hp.	$ 146.80	$ 146.80	$147.00	$106.77	9.95	$22.39
ohio = 0.34/ hp hr	MFWD - 200 hp.	$ 140.00	$ 45.00	$72.90	$74.13	7.04	$15.84
iowa=$0 .28/ hp-hour (fuel not included)	MFWD - 130 hp.	$ 100.00	$ 40.00	$56.40	$48.24	5.72	$12.87
Est. Tractor Cost $0.27/hp/hr.	2- WD - 75 hp.	$ 90.00	$ 30.00	$38.22	$24.19	3.3	$7.43
Est. Fuel use .044 gal. diesel/PTO hp / hour	2- WD - 40 hp.	$ 65.00	$ 20.00	$27.25	$9.83	1.76	$3.96
Auto Steer systems charge per acre				$2.29			

TILLAGE OPERATIONS:	Custom $/Acre [1]	max.	min.	Total Machine Cost/ Ac [3]	Machine Rate per Hour [4]	Acres/Hr. [5]	Est. Fuel Gal./Acre [6]
Plowing: Moldboard (6 bottom)	**$19.42**	$ 30.00	$ 20.00	**$23.58**	$98.33	4.17	1.32
Chisel Plow (23 ft.)	**$15.96**	$ 30.00	$ 14.00	**$10.13**	$131.99	13.03	0.64
Chisel – front disk (16.3 ft.)	**$18.12**			**$14.14**	$130.23	9.21	1.04
Vertical tillage	**$16.90**	$ 30.00	$ 12.00				
Disk-V.Ripper combo (17.5 ft)	**$20.90**			**$21.28**	$191.95	9.02	1.69
Subsoiler 30" - 10ft (12-15")	**$21.34**	$ 35.00	$ 15.00				
Discing - tandem (21 ft)	**$13.68**			**$10.64**	$130.02	12.22	0.74
Field Cultivator (18 ft.)	**$12.34**			**$6.85**	$88.91	12.98	0.34
Harrow	**$10.30**						
Soil Finisher	**$16.08**	$ 24.00	$ 15.00				
Strip tillage	**$20.07**						
Row Cultivate (12 rows)	**$13.40**	$ 30.00	$ 11.50	**$7.74**	$119.58	15.45	0.46
Row Cultivate-high residue (12rows)	**$12.66**						
Stalk Shredder (20 ft.)	**$13.51**	$ 45.00	$ 15.00	**$13.40**	$103.98	7.76	0.74
Rotary Hoe (21 ft.)	**$8.37**			**$0.00**	$0.00	25.96	0.18
Land Rolling	**$7.90**						
Highboy spraying	**$9.21**						
Boom Sprayer-self-Prop.80ft.	**$8.30**	$ 15.00	$ 5.00	**$3.49**	$153.98	44.12	0.07
Boom Sprayer-pull type 90ft.	**$8.03**			**$3.67**	$169.15	46.09	0.12
Spraying- road ditches/ hr	**$63.80**						

PLANTING:	Custom $/Acre [1]	max.	min.	Total Machine Cost/ Ac 3	Machine Rate per Hour [4]	Acres/Hr. [5]	Est. Fuel Gal./Acre [6]
Planter- conventional -w/fert& insect 30" corn-soys	**$18.90**	$ 24.00	$ 10.00	**$16.02**	$224.28	14.00	0.40
Planter- conventional no attachments	**$17.37**	$ 20.00	$ 10.00	**$14.00**	$182.00	13.00	0.32
Planter only	**$12.55**						
Planter only- notill	**$14.05**						
Planter- soybean 15" rows	**$17.69**	$ 22.00	$ 10.00				
Planter- No Till w/spliter & w/fert	**$19.87**	$ 4.00	$ 10.00				
Planter- Min Till with fert&insect	**$21.07**			**$14.50**	$184.59	12.73	0.53
Planter conventional - Dry Beans	**$14.32**						
GPS mapping addition to planting	**$3.00**						
Variable rate seeding	**$3.15**						
Air Seeder Drill w/cart 52ft	**$0.00**			**$20.51**	$452.45	22.06	0.52
Drill Soybeans Conventional	**$15.27**						
Drill-AirSeeder with cart	**$15.10**						
Drill- No Till (15 ft.)	**$18.43**			**$23.94**	$152.26	6.36	0.90
Drill- No Till - drill only no tractor	**$12.27**						
Drill Grain, press wheels (16ft)	**$15.84**	$ 25.00	$ 12.00	**$14.62**	$99.27	6.79	0.61
Grain drill- only-no tractor	**$10.35**						
Seed Tender	**$3.75**						
Pest Control- scouting	**$2.00**						

SUGAR BEETS:	Custom $/Acre [1]	max.	min.	Total Machine Cost/ Ac 3	Machine Rate per Hour [4]	Acres/Hr. [5]	Est. Fuel Gal./Acre[6]
Sugar Beets - Planting (12 row)	$32.50				$0.00	4.67	0.99
Sugar Beet Cultivation	$16.50				$0.00	5.60	0.81
Sugar Beet Topper	$16.50				$0.00	7.13	0.56
Sugar Beet Harvester	$135.00				$0.00	3.03	2.22
Sugar Beet Cart	$40.00				$0.00	5.20	1.80
HARVESTING:	**Custom $/Acre [1]**	**max.**	**min.**	**Total Machine Cost/ Ac 3**	**Machine Rate per Hour [4]**	**Acres/Hr. [5]**	**Est. Fuel Gal./Acre[6]**
Combine - (Corn)	$31.65	$ 45.00	$ 22.00	$36.89	$250.48	6.79	2.00
Corn Head for combine	$9.00						
Combine - stalk chopper head	$41.05			$41.75	$283.48	6.79	1.90
Combine Small grains (20 ft head)	$30.57	$ 45.00	$ 20.00	$33.19	$225.36	6.79	1.70
Combine Soybeans (25 ft. head)	$30.74	$ 45.00	$ 22.00	$35.78	$265.49	7.42	2.04
Combine Soybeans- air reel- flex	$37.05			$35.02	$259.85	7.42	2.04
Soybean head for combine	$9.00						
Combine, cart, haul to storage - Corn	$42.63						
Combine, cart, haul to storage - Soybeans	$8.00						
GPS mapping addition to harvesting	$2.78						
Picker 2 row- Ear Corn + 3 wagons	$28.45						
Combine Field Beans (belt pickup)	$36.67			$30.53	$238.44	7.81	1.55
Pulling Dry Beans (knife 6 row)	$9.75						
Pulling Dry Beans (rod 6 row)	$10.15						
Dry Bean – windrowing (6 row)	$9.75						
Grain Cart- corn / acre	$7.10			$21.05	$144.61	6.87	1.44
Grain Cart only- corn / acre	$4.23						
Chopping Forage- Pull type	6.65						
Chopping Forage -Pull type Pickup hd-10ft	$9.50/ ton						
Chopping Forage-Self-propelled /hr	$247/ hr.						
Chopping Silage- Self propelled- per ton	$6.25						
Chopping Haylage- Self propelled/Ton	$7.60						
Snaplage / acre	$54.05						
Silo Filling -Tower silo: per ton 1Tractor, 1Chopper & Driver, Wagons	9.75/ Ton						
Haylage chopping per ton	$8.53						
Bunk Filling - chop, haul, filling & packing/ ton	$11.43						
Silage Bagging per ft. (9 ft diameter)	$9.43	$ 12.50	$ 8.00				
Mowing	$14.30	$ 16.00	$ 9.00				
Raking	$7.91	$ 12.00	$ 8.00	$1.92	$6.70	3.49	0.07
Tedding	$7.98	$ 11.50	$ 7.00				
Windrowing - hay or straw	$8.63	$ 16.50	$ 5.00	$19.32	$234.16	12.12	0.32
Mower-Conditioner Pull-type (9 ft.)	$16.86	$ 70.00	$ 14.20				
Mower-Conditioner- Self Propelled (16ft)	$17.18	$ 19.00	$ 10.00				
Mower - Conditioner- Rotary (12ft)	$14.19			$10.03	$87.56	8.73	0.38
Small Square Baling /bale- Hay	$0.94	$ 2.00	$ 0.50				
Straw	$0.86						
Mow, Rake, Baler & Handle - small sqr.	$1.87	$ 4.00	$ 1.00				
Baler, Rake & Handle - Lrg Round	$20.50/bale						
Complete Hay harvesting per ton	$35.00						
Wrapping Bales	$7.35	$ 12.00	$ 6.00				
Baling Round - 600 to 800 # per bale	$8.25 per bale						
Baling Round -1200 to1500 # per bale	$11.25 per bale	$ 18.00	$ 6.00				
Baler 1000# Round/ with wrapper	$12.25 per bale						
Mow-Rake-Bale-fld Haul- Lrg. Round/bale	$19.95 per bale	$ 30.00					
Baling -1500 # Lrg. Round - stalks/straw	$15.12 per bale						
Baling -1500 # Lrg. Round - stalks/straw w/wrap	$13.90 per bale						
Picking up w/accumulator- lrg sq bale	$3.42						
Baling – Lrg Sqr. Hay 4x3x6	$10.58 per bale	$ 10.00	$ 2.50				
Baled& Wrapped- plastic	$18.00						
Baling – Lrg Sqr. Hay 4x3x8	$13.75						

FERTILIZER:	Custom $/Acre [1]	max.	min.	Total Machine Cost/ Ac 3	Machine Rate per Hour [4]	Acres/Hr. [5]	Est. Fuel Gal./Acre[6]
Fertilizer Dry Bulk: Spreading	$6.31	$ 15.00	$ 5.00				
Fertilizer dry Bulk Spreader only-	$3.72						
Lime application	$7.27	$ 10.00	$ 3.00				
Fertilizer- Liquid-Knifed In	$12.27						
Fertilizer - side dressing	$11.20	$ 15.00	$ 8.00				
Liquid-Sprayed:	$6.91	$ 12.00	$ 5.00				
Fertilizer- Anhydrous: 21 ft.	$12.76						
Soil Testing - GPS grid samples	$7.65						
Manure Hauling - semi-solid Load&Spread / hr.	$122.25						
Liquid Manure Spreader Injected-1000 gal.	$10.65						
Liquid Manure spreader only /hr.	$41.35						
Solid Manure spreader only /hr	$59.42						
Liquid Manure injected Drag Line -1000 gal.	$12.35						
Manure Pump, Hauling, Spreading - liquid (9500 gallon cap.) per hour	$92 / hour						
Manure Pump, Hauling, Injecting 1000 gal. liquid (9500 gallon cap.)	$12.50 per 1000 gal.						
Bobcat/Skid Loader / hr.	$53.40	$ 125.00	$ 35.00				
Mowing CRP or pasture / acre	$25.53	$ 90.00	$ 13.50				
Ditch Mowing	$59.81 per hour						
Brush Hogging/ acre	$21.94						
Grain Drying- continuous flow / point/ bu.	$0.04/pt./bu.						
Grain Drying- inbin dryer / point / bu.	$0.06/pt/bu.	$ 0.35	$ 0.03				
Grain Auger/ bu.	$0.05						
Grain Auger only / bu	$0.04						
Blower- silo filling / hour	$19.90						
Grain Storage/ mo.	$0.06/bu./mo.	$ 0.07	$ 0.02				
Grain Storage for season	$ 0.21 per bu.						
Grain Haul - per bu. - field to farmstead	$0.09 / up to 10 miles	$ 0.80	$ 0.08				
Grain Haul - per bu. - farm to mkt 25mi	$0.17 / up to 25 miles	$ 0.45	$ 0.12				
Grain haul per loaded mile	$3.23	$ 3.65	$ 2.25				
Haul Livestock - trailer	$2.32	$ 3.25	$ 1.75				
Rock picking	$14.85						
Backhoe /hour	$83.57	$ 125.00	$ 17.00				
Auto Steer System	$1.36						
Machine storage sqr. Ft. per year	$0.51						
Custom Farming- Corn	$104.16	$ 175.00	$ 50.00	(all machine operations for growing & harvest)			
Custom Farming- Soybeans	$93.01	$ 170.00	$ 50.00	(all machine operations for growing & harvest)			
Custom Farming- Sm Grains	$94.99	$ 125.00	$ 50.00	(all machine operations for growing & harvest)			

Fuel cost is calculated by adding fuel, oil and lube calculated by adding 10% to the power fuel cost of $2.00 $2.250 ** base fuel & lube price used

1 Custom $ per acre: Represents the rate obtained from surveys of actual farm data surveys for 2014 & 2015 from Universities listed below to do this type of machine work for another farm on a general basis. Higher or lower rates apply in each situation depending on crop conditions, soil conditions, size of fields and there locations. This numbers includeds machine, power unit & operator where needed. Values have been adjusted higher to reflect the change in power fuel costs noted above.

3 Total Machine Cost/Acre: Includes tractor, fuel cost **, lubricants, repairs, maintenance, labor and overhead costs including depreciation. This could be considered as an estimate of the ownership cost and operation of this machine on a per acre basis. No profit or return to management, which would be necessary for on going enterprises were included in this number. Values are based on "Farm Machinery Economic Cost Estimates for 2014, University of Minnesota

4 Machine Rate per Hour: This number takes the Total Machine Cost per Acre and factors in the estimated Acres per Hour to give a value of represents an estimate of the hourly operational and ownership cost of machinery supported by ©University of Minnesota, Machinery Economic cost estimates for 2014. If the machine is run at full capacity (or engine clock hours) this per acre rate should be in the custom work value generated.

5 Acres/ Hour: This is an estimate of the acres this machine should average on a per hour basis with normal down time.

6 Gal./ Acre: This is an estimated machine use of fuel consumed to do this activity and is based on a factor of 0.044 gallons of diesel fuel per PTO hoursepower-hour on an average. Your individual machines fuel use may varry from this number.

7 Labor cost: charged for this table at a rate of $15.00 per hour unskilled tasks and $20.00 per hour for skilled labor (planter, sprayer, harvester).

Costs were developed as an adjusted estimate of common rates being used by farms in this area to cover their cost of operation.

Major shifts in power fuel cost during the past few year has had an impact on and has changed the cost of machine operational cost.

As a thumb rule it is estimated that each $1.00 increase in fuel cost, will increase most machine operations by an additional 15%.

- University of Minnesota, Machinery Economic cost estimates for 2015 © at https://drive.google.com/file/d/0B3psjoooP5QxWWd3a2cwblJCTjQ/view
- Iowa 2015 Iowa Farm Custom Rate Survey - Ag Decision Maker at http://www.extension.iastate.edu/agdm/crops/pdf/a3-10.pdf

- Ohio State Univeristy - Ohio Farm Custom Rates 2014 by Barry Ward: http://ohioline.osu.edu/ae-fact/pdf/Ohio_Farm_Custom_Rates_AEDE_11_14.pdf
- Kansas 2014 Projected Custom Rates, Kevin C. Dhuyvette rat http://www.agmanager.info/farmmgt/machinery/Tools/KCD_CustomRates(Feb2014).pdf
- Pennsylvania 2014 Machinery Custom Rages, USDA- NASS, Adam W. Pike, Ag Statistician at http://www.nass.usda.gov/Statistics_by_State/Pennsylvania/Publications/Machinery_Custom_Rates/CustomRates%202014.pdf
- Nebraska 2014 Neb. Farm Custom Rates, Roger K. Wilson at https://cropwatch.unl.edu/documents/Nebraska-Farm-Custom-Rates-1.pdf
- Illinois 2015 Machinery Cost Estimates: Summary at http://www.farmdoc.illinois.edu/manage/machinery/summary_2015.pdf
- Kentucky-Custom Machinery Rates 2015, Greg Halich, March 2015 at https://www.uky.edu/Ag/AgEcon/pubs/CustomRatesKY.pdf
- Maryland-Custom Work Charges in Maryland 2015, Shannon Dill, Univ. of Maryland Ext. at https://extension.umd.edu/grainmarketing/custom-rates-0
- Texas A&M University, 2011 at http://agecoext.tamu.edu/files/2012/05/CustomRateSurveyMay2013.pdf

* This report is a summary of information extracted from various sources. Your actual cost may vary greatly from the numbers presented. It is recommended that you calculate your own cost and economic returns necessary for the operation of machinery and equipment on your individual farm.

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HOW TO FIGURE YOUR MACHINE WORK RATES

If you are hiring or doing custom work, the following will help you determine the custom rate. Custom rates are based on tradition or usual rates set in the community, the bargaining positions of both parties (i.e., availability of machinery services and demand for machinery services in your local area) and cost of operating the machines on your farm.

Cost of ownership and operation can be determined as follows:

Ownership cost per unit (e.g., acre, bushel, ton, hour)using the DIRTI 5:

1. Depreciation: original cost - salvage value / years of use			$ _____
2. Interest: interest rat x AIV[a]			$ _____
3. Repairs: estmated 2 to 5 % of original cost			$ _____
4. Taxes: (0 in Michigan -i.e., no taxes on personal property used in agriculture)			$ _____
5. Insurance: (estimated 0.5% x AIV for insurance premium)			$ _____
6. Total ownership cost per year (add lines 1 thru 5)			$ _____
A. Ownership cost per unit: total ownership cost ÷ estimated annual use (acre, hour, bushel, ton)		(A)	$ _____
Operating Cost per (acre, hour, bushel, ton)			
1. Tractor: fuel (gallon fuel per unit x price/gallon) x 1.15[b]			$ _____
2. Machine: gas or fuel gallons per unit x 1.15[b]			$ _____
3. Labor: hours per unit x wage rate (if labor wage unit is per acre, bushel or ton multiply this wage by acres bushels or tons per hour to determine wage/hour)			$ _____
B. Total operating cost per unit		(B)	$ _____
C. Total ownership and **operating cost** per unit		(A+B)	$ _____
D. Desired profit margin and / or risk premium	4.5 %		
E. Custom Rate (per acre, hour, bushel, ton) Line C x [1+(Line D/100)]			$ _____

a Average investment value (AIV) = (original cost basis - salvage value) ÷ 2.
b The addition of 15 percent above fuel cost is for oil & lube. maintenance.

Custom Machine rate calculator is available on line at Ohio State University: http://aede.osu.edu/research/osu-farm-management/decision-tools

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