

Commodity Grains in the U.P.

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March 6, 2012

Agriculture for Tomorrow Conference

With high grain prices expected to hold for 2012, U.P. farmers may wish to consider small grain cash crops, including wheat and oats. Barley prices may not be as attractive, but barley is still a viable farm-produced feed grain in the U.P.

Other options may include dry field peas for on-farm livestock feed, rye, dry beans, sunflowers and specialty grains.

Background

1. Historical data from NASS:

- 1942 – current county data on oats, barley, wheat, & dry beans
 - *Historical perspective*
 - *Compare U.P. county acreage & performance*
 - *Compare yield trends on 10-year intervals*
 - *Indications of current average yields*
 - *Blank cells = no data available (not zero acreage)*

2. Comparison of U.P. and statewide info

First we will look at historical production of small grains and dry beans across the U.P. since the 1940's. This information compares acreage and performance across a selection of U.P. counties over 10-year intervals. It also gives indications of average reported yields over the last 4 years, both state-wide and U.P.-wide. Where data is not included does NOT indicate that no crop was grown, simply that nothing was reported.

U.P. Oats 1942 - present

	Alger		Chippewa		Delta		Houghton		Menominee	
	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>
1942	1740	30	4100	31	9290	38	6160	30	11620	40
1952	2600	43	11300	24	11500	45	7900	36	19600	45
1962	1600	40	10000	36	7500	44	4000	35	13800	52
1972			7100	53	5200	51	1900	49	8300	50
1982	470	40	6300	39	4100	57	1700	34	5700	49
1992	130	58	2000	60	2050	68	550	40	1600	55
2002			2000	60	2050	68	550	40	1600	55
2008			1100	46					1500	57
2011			500	56	1100	70			800	65

Oat acreage across the U.P. has dropped dramatically, while average yields have increased.

Oats: U.P. vs MI

	Oats			
	U.P.		MI	
	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>
2008	7800	55	60000	66
2009	7800	58	55000	63
2010	8100	61	60000	68
2011	4800	60	30000	64
<i>average</i>		59		65

Reported oat yields in the U.P. are somewhat lower than the state-wide average. Acreage dropped 50% statewide between 2010 and 2011.

U.P. Barley 1942 - present

	Alger		Chippewa		Delta		Houghton		Menominee	
	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>
1942	700	21	2620	27	1800	33	1200	27	2290	33
1952	250	35	1200	18	1300	33	130	30	1100	35
1962			200	34						
1972	15	37	55	35	620	45	15	40	2320	50
1982	580	51	581	41	3000	53	240	51	2800	51
1992	500	60	90	44	2000	60	200	50	1300	54
2002					1600	62			1200	46
2008					1150	36			1450	40
2011										

Barley acreage has also declined in the U.P. over the last several decades, with significant increases in yield per acre.

U.P. Barley acreage has dropped sharply in recent years.

Barley: U.P. vs MI

	Barley			
	U.P.		MI	
	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>
2008	4300	40	10000	46
2009			11000	51
2010			10000	70
2011			8000	48
<i>average</i>		<i>40</i>		<i>54</i>

Barley yields in the U.P. are significantly lower than the state average.

U.P. Wheat 1942 - present

	Alger		Chippewa		Delta		Houghton		Menominee	
	Acres	Bu/a	Acres	Bu/a	Acres	Bu/a	Acres	Bu/a	Acres	Bu/a
1942	10	20	2140	21	240	20	130	20	530	23
1952	10	10	2700	17	170	26	70	17	600	25
1962			500	21	100	22			100	23
1972			100	25					100	26
1982	20	30		300	38				150	35
1992					700	30			130	23
2002					600	52				
2008										
2011										

Wheat acreage in the U.P. is very small and reported yields don't allow for a good estimation of its current potential.

Wheat: U.P. vs MI

	Wheat			
	U.P.		MI	
	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>
2008	2800	46	710000	55
2009	2200	48	570000	69
2010	1500	57	530000	70
2011	1500	51	700000	75
<i>average</i>		51		67

U.P. wheat consists of both soft winter wheat and hard red spring wheat. The yields indicated are a combination of both. Spring wheat typically yields less than winter wheat.

Statewide, the wheat crop is nearly all soft winter wheat.

U.P. Dry Edible Beans 1942 - present

	Delta		Houghton		Menominee	
	<i>Acres</i>	<i>lbs/a</i>	<i>Acres</i>	<i>lbs/a</i>	<i>Acres</i>	<i>lbs/a</i>
1942	30	640	40	480	70	690
1952						
1962						
1972						
1982	1040	1100	90	1000		
1992	1250	950				
2002						
2008						
2011						

The acreage of dry edible beans in the U.P. is small. The main class of dry edible bean grown in the U.P. is dark red kidney.

Dark Red Kidney Beans U.P. vs MI

	Dark Red Kidney Beans			
	U.P.		MI	
	<i>Acres</i>	<i>Bu/a</i>	<i>Acres</i>	<i>Bu/a</i>
2008	1100	820	2400	1210
2009			1900	1160
2010	1300	880	2900	1100
2011			2700	1000
<i>average</i>		850		1118

Yields of dark red kidney beans in the U.P. are generally lower than the state-wide average. About half of Michigan's dark red kidney beans are grown in the U.P., located in Delta County's 'Garden Peninsula' and nearby in Schoolcraft county.

Prices

1. Weighted state average 2011 prices from Michigan Agricultural Statistics Service (dry beans = all classes)

	Wheat	Oats	Barley	Dry Beans
	<i>\$/bu</i>	<i>\$/bu</i>	<i>\$/bu</i>	<i>\$/cwt</i>
2011	6.70	3.40	3.50	45.80
2010	5.72	2.45	2.45	31.60
2009	4.25	2.21	2.80	33.50
2008	5.63	3.40	3.25	36.30
2007	5.01	2.91	2.50	31.90
2006	3.41	1.93	1.80	21.10
2005	3.13	1.89	1.80	19.60
2004	3.01	1.72	1.80	22.50
2003	3.25	1.65	1.70	19.30
2002	3.28	1.80	1.60	15.30

2. Price check Feb 24, 2011 – Bark River, MI
Oats: \$3.25/bu, Barley: \$4.00/bu

These average 2011 prices for wheat, oats, barley and dry beans (all classes) were provided by the Michigan Agricultural Statistics office. They indicate a steady improvement in prices over the last 10 years, with strong prices in 2011.

The 'price check' was made with Ray's Feed Mill in Bark River to provide an idea of cash prices currently available to U.P. farmers. There is no local commodity market for wheat or dry beans in the U.P.. Local sales are possible. However, producers should research market possibilities thoroughly before trying a new cash crop.

Commodity grains with U.P. potential

1. Wheat
 - winter
 - spring
2. Oats
3. Barley
 - feed
 - malting
4. Dry beans
5. Field peas
6. Sunflowers
7. Rye
8. Canola
9. Others?
 - Spelts
 - Flax
 - Biodiesel oilseeds
 - Organic feed grains
 - Organic food grains

These grains are possibilities for cash crops in the U.P. Some, including field peas, sunflowers, rye, organics and 'others' would require special marketing efforts.

Only oats and barley currently have local cash sales available at a commercial U.P. elevator. Wheat, dry beans and canola could be marketed to large companies in the Michigan or upper Great Lakes region. Crops like sunflower, dry field pea, spelt, flax and organics may require development of local markets, or seeking out arrangements with buyers from very specialized markets.

Wheat

60 lbs/bu @ 13% moisture

2 main types

- Winter
 - Soft red winter (SRW)
 - Soft white winter (SFW)
- Spring – (*grain protein requirements*)
 - Hard red spring (HRS)

Average yield

- U.P. avg 2008-2011 (MI Ag Stats): 51 bu/a
- MSU U.P. Research Center:
 - Spring wheat (2008-2011, 4 yrs avg): 39 bu/a
 - Winter wheat (2008 & 2011, 2 yrs avg): 54 bu/a



Wheat is marketed in units of bushels at 60 lbs per bushel. The main types of wheat raised in Michigan are soft white winter and soft red winter wheat. A small acreage of hard red spring wheat is also raised in the U.P. Hard red spring wheat has more stringent protein requirements.

Average reported wheat yields in the U.P. are 51 bushels per acre. Both winter and spring wheat have been grown in variety trials at the MSU Research Center in Chatham.

Achieving a good test weight (60 lbs per bushel) can be challenging under U.P. growing conditions.

Wheat



Price: SRW 2011 MI avg - \$6.70/bu

HRS 2011 USDA (MGEX) - \$8.59/bu

Prices received for wheat by farmers in 2011 were very strong. It is expected that strong prices will hold for 2012.

Wheat



- Soil considerations
 - Well-drained with good water holding
- Fertility
 - pH 6 – 7, 6.5 ideal
 - Nutrient removal:

		N	P ₂ O ₅	K ₂ O
Grain	Bu	1.2	0.63	0.37
Straw	ton	13	3.3	23

- Example: 51 bu/a + 1.2 T straw =
 - 77 lb N (167 lb urea)
 - 36 lbs P₂O₅ (78 lbs 0-46-0)
 - 46 lbs K₂O (77 lbs 0-0-60)
- 322 lbs total fertilizer X \$660/ton (est.) = \$106/a

Wheat performs best in well drained, but not droughty soils.

This example of fertilizer calculation assumes the average wheat yield for the U.P. and calculates 'crop removal' rates for nutrients. The dollar figures are based on nutrient costs per lb from a U.P. bulk fertilizer source.

If straw is not baled and removed, then potassium fertilizer rate can be reduced appropriately.

SRW and SWW varieties in MI, 2011



SRW Varieties	SRW acres #	SRW acres %	SWW Varieties	SRW acres #	SRW acres %
Hopewell	137,000	32.2%	Pioneer 25W43	41,000	15.1%
Pioneer 25R47	74,200	17.5%	Ambassador	35,700	13.1%
Red Ruby	47,300	11.1%	AC Mountain	30,300	11.1%
Pioneer 25R56	24,000	5.6%	Pioneer 25W36	26,500	9.7%
Pioneer 25R62	13,700	3.2%	Caledonia	23,700	8.7%
DR-R045	12,800	3.0%	Aubrey	21,100	7.8%
Pioneer 25R39	10,000	2.4%	MSU D8006	13,700	5.0%
Pioneer 25R78	8,900	2.0%	Crystal	12,400	4.6%
Sunburst	8,430	1.4%	Syngenta W1062	11,300	4.2%
Butch	6,070	1.2%	Coral	11,300	4.2%
DF-R075	5,240	1.2%	Hyland Ava	9,930	3.7%
Roane	5,120	1.1%	MSU D6234	4,210	1.5%
Branson	4,630	1.1%			

Only includes those varieties with more than 1 percent of acreage.

From Martin Nagelkirk and Roy Black, MSUE

The graph is from the MSU Extension News website and shows which soft white spring and soft red spring wheat varieties were most commonly grown in Michigan in 2011

Spring wheat in trial at MSU U.P. Research Center, 2011



Spring wheat variety

Variety	Moisture percent	Test wt. lbs/bu	Height (in.)	Yield* bu/A	Heading date	Origin
Barlow	12.9	59.6	37.6	52.7	07/02/11	North Dakota
Brick	12.4	60.1	37.9	51.4	07/01/11	South Dakota
Faller	11.8	54.4	35.4	53.3	07/05/11	North Dakota
RB07	11.2	56.5	32.8	53.1	07/02/11	Minnesota
Sabin	11.3	56.3	33.9	51.1	07/05/11	Minnesota
Tom	12.5	58.5	35.0	53.5	07/05/11	Minnesota
Average	11.9	57.6	35.4	52.5		
LSD @ 0.05	0.5	0.6	1.4	7.6		
C.V. %	2.9	0.7	2.6	9.7		

*Yield adjusted to 13 percent moisture.

From MSUE "On-Farm Research and Demonstration, Jan 2012

This slide shows the results of the MSU 2011 spring wheat variety trial at Chatham. The growing conditions for small grains of all kinds was excellent in 2011 and yields were unusually high.

Spring wheat in trial at MSU
U.P. Research Center, 2010
(a more typical year)



Spring wheat varieties

Variety	Moisture percent	Test wt. lbs/bu	Height (In.)	Yield* bu/A	2-year average	Heading date	Origin
Ada	13.9	55.9	30.7	29.6	29.2	07/03/10	Minnesota
Brick	14.8	61.2	34.6	36.2	NA	06/30/10	South Dakota
Faller	14.3	59.3	34.2	37.7	NA	07/03/10	North Dakota
Glenn	14.9	61.9	35.3	28.3	NA	07/01/10	North Dakota
RB07	14.2	58.0	30.6	30.3	34.9	07/02/10	Minnesota
Sabin	14.3	59.6	32.6	41.2	NA	07/04/10	Minnesota
Tom	14.9	60.8	32.6	36.8	31.8	07/02/10	Minnesota
Average	14.5	59.5	31.9	34.3	31.9		
LSD @ 0.05	0.3	1.3	1.6	4.7	5.5		
C.V. %	1.3	1.5	3.4	9.4	10.0		

*Yield adjusted to 13 percent moisture.

From MSUE "On-Farm Research and Demonstration, Jan 2011

This chart gives MSU spring wheat variety trial results at Chatham for 2010, including a 2-year average (2009 + 2010). Yields are more 'normal' than the high yields of 2011.

Wheat Seed

(The following examples are not endorsements or recommendations)

1. Seed companies

- Pioneer
- Agripro

2. State Crop Improvement Associations

- Michigan Crop Improvement Assn.
- Minnesota Crop Improvement Assn.

3. Seed “houses”

- Albert Lea Seeds
- Welter Seed and Honey

In the past, much of the soft winter wheat grown in Michigan were public varieties developed at universities. Currently, private sector seed company varieties have a much greater share of the market.

Public varieties can be procured directly from seed growers through the state crop improvement associations and seed houses.

Wheat Agronomics



- 11,000 – 18,000 seeds/lb
- Plant 2 – 2.5 bu seed/a (120-150 lbs)
- Seed 1 – 2” deep in 7 – 10” drill strips
- P & K before planting
- N:
 - Winter wheat: 10-15 lbs N in fall, remainder in spring
 - Spring wheat: all N prior to planting
 - Split application helpful in some years

This slide gives a few basics on wheat culture. Planting date is also important. With the small acreage in the U.P., little attention has been given to determining the best planting date for winter wheat. Growers on less well-drained soils try to get winter wheat planted as early as Labor Day.

Plant population and nitrogen management are also important factors in maximizing performance.

Wheat Agronomics



- Avoid planting into last year's corn ground (fungal disease carryover). If unavoidable, work residue into soil thoroughly.
- Disease control: Prosaro fungicide applied at flowering has resulted in economical results in MSU trials (6 bu/a yield increase)
- Weed control: Refer to MSU Weed Control Guide. Many options are available

Wheat is vulnerable to a number of fungal diseases. Avoiding planting in to corn or small grain stubble can reduce risk of fungal diseases. If unavoidable, then incorporating last year's crop residues will help minimize risk.

Fungicide application is becoming more common on Michigan wheat and has shown good results in research trials.

Refer to MSU weed control guide for weed control options. Available online at:

<http://www.msuweeds.com/publications/weed-control-guide/>

Where to sell wheat?



- Develop a marketing plan along with your production plan.
- Spring wheat – delivery in Minnesota
- SRW or SWW – deliver in lower Michigan
- Include marketing and trucking costs in your budget

Winter wheat can be marketing in lower Michigan or Wisconsin. Delivery points for spring wheat are more distant.

It is important to research your marketing options before getting started with any new crop. It should not be difficult to find opportunities for winter wheat. Keep in mind that you will be docked for quality problems, including low test weight, high moisture and other quality factors. Protein content is a very important quality factor in hard red spring wheat.

Oats



32 lbs/bu @ 14% moisture

Average yield

- U.P. avg 2008-2011 (MI Ag Stats): 59 bu/a
- MSU U.P. Research Center:
 - 2008-2011, 4 yrs avg: 85 bu/a

Oats are measured in 32 lb bushels corrected to 14% moisture.

Average yields in the U.P. in recent years were 59 bushels per acre. Keep in mind that some of these acres were almost certainly planted at low population to avoid smothering a new hay crop seeded along with the oats.

Average yields for the same period for the variety trials conducted at the MSU research station in Chatham were 85 bushels per acre.

100 bushels per acre for oat yield is not unusual in the central U.P.

Oats



Price: 2011 MI average: \$3.40/bu

Feb 24, 2012, Bark River: \$3.25/bu

The average, weighted price received for oats by Michigan farmers in 2011 was \$3.40 per bushel, according to the Michigan Ag Statistics Service.

A price check at Ray's Feed Mill in Bark River on February 24, 2012 indicated a price of \$3.25.

Oats



- Soil considerations
 - Fairly tolerant of wetter and low pH soils
- Fertility
 - pH 5.5 – 7, 6.5 ideal
 - Nutrient removal:

		N	P ₂ O ₅	K ₂ O
Grain	Bu	0.62	0.25	0.19
Straw	ton	13	2.8	57

- Example: 59 bu/a + 1.5 T straw =
 - 56 lb N (122 lb urea)
 - 19 lbs P₂O₅ (41 lbs 0-46-0)
 - 97 lbs K₂O (162 lbs 0-0-60)
- 325 lbs total fertilizer X \$660/ton (est.) = \$107/a

Oats will tolerate less well drained and more acidic soils than wheat or barley.

The chart shows nutrient removal rate of oat grain and straw. An average-yielding U.P. oat crop, including straw would remove approximately \$107 worth of fertilizer nutrients at current fertilizer costs.

Oat varieties of proven performance



Ida – white color, early, good yield, MI

Ogle – older variety, early, yellow color, good yield

Excel - good yield, good disease resistance, white color, moderately early, good lodging resistance.

Esker – yellow color, mid-season maturity, good disease resistance, good yield, WI

Rockford – new, later maturing, good disease resistance, 'ivory white' color, good yield, ND

These oat varieties have been popular in recent years, except for Rockford, which is new and not commonly grown in the area. It is a variety to watch.

Oats in trial at MSU U.P. Research Center, 2011



Variety	Moisture percent	Test wt. lbs/bu	Height (in.)	Yield* bu/A	Heading date	Origin
Badger	11.8	33.8	31	78.8	07/01/11	Wisconsin
Buckskin	11.5	34.7	29.9	85.2	07/05/11	Illinois
Colt	12.0	36.8	33.5	69.6	07/02/11	Illinois
Corral	11.7	33.4	30.0	101.0	07/07/11	Illinois
Esker	11.7	31.6	33.5	98.2	07/05/11	Wisconsin
Excel	11.2	30.4	33.8	113.7	07/05/11	Indiana
Ida	11.9	30.8	36.3	102.5	07/06/11	Michigan
Ogle	11.7	30.8	33.0	102.8	07/05/11	Illinois
Saber	12.1	32.7	30.9	93.2	07/05/11	Illinois
Spurs	12.0	33.4	32.1	103.0	07/05/11	Illinois
Average	11.7	32.8	32.4	94.8		
LSD @ 0.05	0.6	0.9	1.7	15.3		
C.V. %	3.3	2.0	3.6	11.1		

*Yield adjusted to 14 percent moisture.

From MSUE "On-Farm Research and Demonstration, Jan 2012

Average oat yield of varieties in trial at Chatham in 2011 was 95 bushels per acre.

The highest yield was 114 and lowest was 69.6. There was considerable difference in test weight and moisture at harvest among varieties.

Oat Seed

(The following examples are not endorsements or recommendations)

1. State Crop Improvement Associations

- Michigan Crop Improvement Assn.
- Minnesota Crop Improvement Assn.

2. Seed “houses”

- Albert Lea Seeds
- Welter Seed and Honey



3. Local suppliers

4. Certified seed is recommended, however, farmers sometimes plant ‘bin run’

Oat seed is available through local elevators, state crop improvement associations and seed houses.

Certified seed is recommended. However, it is a common practice for farmers to buy certified seed every other year, and plant ‘bin run’ (or ‘one year from certified’) seed in between years.

Oat Agronomics



- 16,200 seeds/lb
- Plant about 3 bu seed/a (80-110 lbs)
- Seed 1 – 2” deep in 7 – 10” drill strips w/press wheels
- N, P & K before planting
- Plant early – as soon as soil can be prepared. Soil temp in low 40’s is OK.
- Iowa studies show loss of 1.3 bu/a/day

Oat culture is similar to barley. Planting rate is 80-110 bushels per acre.

Planting oats as early as practical will result in best yields. Studies in Iowa indicated a loss of 1.3 bushels per acre for every day planting was delayed past the optimum date.

Oat Agronomics



- Avoid weedy fields, barley or oat stubble
- Avoid herbicide carry-over
- Disease control: Fungicide applied at flag leaf emergence can enhance yield and quality
- Include N credits in fertilizer rates
- Weed control: Refer to MSU Weed Control Guide. Many options are available including 2,4-D, Buctril, MCPA/Banvel, and others

Avoid planting oats in fields where fungal pathogens may carry over from a previous crop. Also be aware of herbicide use that may impact oats the following year.

If oat prices warrant, use of fungicide to improve yield and quality may be economical.

Too much nitrogen can result in oats getting overly tall and lodging before combining. Be sure to consider nitrogen credits from previous legume crops.

Where to sell oats?



- Develop a marketing plan along with your production plan.
- Local sales are an option
- Include marketing and trucking costs in your budget

Oats can be sold locally. Be sure you have a solid marketing plan in place and include transportation costs in your crop budget.

Barley

48 lbs/bu @ 14.5% moisture



Average yield

- U.P. avg 2008-2011 (MI Ag Stats): 40 bu/a
- MSU U.P. Research Center:
 - 2008-2011, 4 yrs avg: 56 bu/a

Oats are measured in 48 lbs bushels at 14.5% moisture

Average U.P. yields reported by Michigan Ag Statistical Service is 40 bushels per acre from 2008 through 2011

Average yields from variety trials at Chatham are significantly higher at 56 bushels per acre.

This suggests that attention to detail pays off in improved performance and yield.

Barley



Price: 2011 MI average: \$3.50/bu

Feb 24, 2012, Bark River: \$4.00/bu

The average, weighted price received for barley by Michigan farmers in 2011 was \$3.50 per bushel, according to the Michigan Ag Statistics Service.

A price check at Ray's Feed Mill in Bark River on February 24, 2012 indicated a price of \$4.00 per bushel.

Barley



- Soil considerations
 - Well-drained, fertile soils best
- Fertility
 - pH 6.0 or higher
 - Nutrient removal:

		N	P ₂ O ₅	K ₂ O
Grain	Bu	0.88	0.38	0.25
Straw	ton	13	3.2	52

- Example: 40 bu/a + 0.75 T straw =
 - 45 lb N (98 lb urea)
 - 15 lbs P₂O₅ (34 lbs 0-46-0)
 - 49 lbs K₂O (82 lbs 0-0-60)
- 214 lbs total fertilizer X \$660/ton (est.) = \$71/a

Barley is less tolerant of poorly drained and acidic soils than oats.

The chart shows nutrient removal rate of barley grain and straw. An average-yielding U.P. barley crop, including straw would remove approximately \$71 worth of fertilizer nutrients at current fertilizer costs.

Barley varieties of proven performance



Bowers - medium maturing variety with good lodging resistance, resistance to mildew, stem rust, spot blotch, and net blotch. Feed type. MI

Excel - six-rowed, smooth-awned, short variety with good lodging resistance. High level of resistance to stem rust and moderate resistance to spot blotch. Malting type. MN

Kewaunee – High grain yields, lodging resistant, smooth awns. Feed-type. WI

Rasmusson – High yielding, six-rowed, shorter than most current six-rowed malting varieties in the Midwest with good lodging resistance. Resistant to spot blotch. MN

These are commonly grown barley varieties in the U.P.

Barley in trial at MSU U.P. Research Center, 2011

Variety	Moist.	Test wt.	Ht. (in.)	Yield*	Heading	% lodging**	Type	Origin
B3719	16.0	45.5	34.4	74.9	07/06/11	1	Malting	BAR LLC***
CDC Mayfair	14.7	45.1	40.4	86.0	07/03/11	2	Malting	Canada
Celebration	15.0	47.1	38.4	81.1	07/03/11	2	Malting	BAR LLC
Conrad	15.3	48.6	30.8	73.0	07/04/11	1	Malting	BAR LLC
Excel	15.6	45.7	38.4	69.0	07/05/11	5	Malting	Minnesota
Innovation	15.2	49.2	38.8	89.0	07/01/11	2	Malting	BAR LLC
Kewaunee	15.1	47.5	40.5	86.5	07/02/11	3	Malting	BAR LLC
Merit 57	16.0	39.7	33.4	84.5	07/03/11	1	Malting	BAR LLC
Quest	14.7	47.4	42.8	88.8	07/01/11	4	Malting	Minnesota
Rasmsson	15.2	48.5	37.0	76.9	07/01/11	5	Malting	Minnesota
Stellar-ND	15.5	47.3	39.3	78.1	07/02/11	5	Malting	North Dakota
Tradition	15.1	49.7	38.5	76.5	07/03/11	4	Malting	BAR LLC
Average	15.3	46.8	37.7	80.3				
LSD @ 0.05	0.7	1.5	2.1	11.6				
C.V. %	3.3	2.2	3.9	10.0				

*Yield adjusted to 14.5 percent moisture.

**Percent lodging based on a 1–10 scale: 1 = 0–10 percent lodged, 9 = 90–100 percent lodged.

***Busch Agricultural Resources, Inc.

From MSUE "On-Farm Research and Demonstration, Jan 2012

Average barley yield of varieties in trial at Chatham in 2011 was 80 bushels per acre. This was an unusually high yield.

The highest yield was 89 and lowest was 69 bushels per acre. There was considerable difference in test weight and moisture at harvest among varieties.

Barley Seed

(The following examples are not endorsements or recommendations)

1. State Crop Improvement Associations

- MI, WI, MN Crop Improvement Assns.

2. Seed “houses”

- Albert Lea Seeds
- Welter Seed and Honey



3. Local suppliers

4. Certified seed is recommended, however, farmers sometimes plant ‘bin run’

Barley seed, like oats, is available through local elevators, state crop improvement association growers and seed houses.

Barley Agronomics



- 14,300 seeds/lb
- Plant about 2-2.5 bu seed/a (96-120 lbs)
- Seed 1 – 1.5” deep in 7 – 10” drill strips w/press wheels
- N, P & K before planting
- Plant early – as soon as soil can be prepared, after oats. Soil temp in low 40’s is OK.

Barley cultural practices are similar to oats. They are typically planted immediately following oats.

Barley Agronomics



- Avoid weedy fields, corn, barley or oat stubble (fusarium)
- Avoid grass herbicide carry-over
- Disease control: Fusarium head blight - fungicide applied at flag leaf emergence can enhance yield and quality
- Include N credits in fertilizer rates
- Weed control: Refer to MSU Weed Control Guide. Many options are available including 2,4-D, Buctril, MCPA/Banvel, and others

Very similar to oats.

Where to sell barley?



- Develop a marketing plan along with your production plan.
- Local sales are an option
- Include marketing and trucking costs in your budget

Barley can be sold locally. Be sure you have a solid marketing plan in place and include transportation costs in your crop budget.

Other crops

- Dry field peas
- Dry beans
- Sunflowers
- Canola

These crops have potential in the U.P. also. However, they require more careful consideration because of the potential difficulties in production and/or marketing.

Dry field peas

POSITIVES



- Potential farm-grown protein concentrate
 - 20-26% protein, 45-55% starch
- 60 lb bushel of peas
 - Protein and energy approximately equals 40 lbs corn grain + 20 lbs soybean meal
- Low N fertilizer needs, moderate P and K
- Tolerant of low soil pH
- Contributes up to 1.25 lbs residual N per bushel yield for following crop
- Perform well on all well-drained soil types
- Early planting and harvest – could rotate with winter wheat
- Frost tolerant
- Some N fixation - Up to 1.25 lbs N per bu harvested per acre

Dry field peas have been tested at Chatham and show potential for good production under U.P. conditions. They provide farmers a home-grown alternative to high protein, high starch concentrate feeds like soybean meal and corn grain.

Dry field peas are tolerant of acidic soils and can withstand light frost. They are a legume and fix nitrogen, and have moderate requirement for P and K.

Dry field peas

NEGATIVES



- “New” crop
- Disease pressure – seed rots, fusarium mildews, white mold – 4 year rotation desirable
- Modest yields – 40 bu/a? (60 lbs/bu)
- Need inoculation
- Require well-drained soil
- Rolling needed before feeding
- Limitations on feed percentage – NDSU
- No local commodity markets
- Distant seed supply
- Labeled herbicides limited/lacking

On the other hand, dry field peas are a ‘new’ crop for most U.P. farmers.

They are vulnerable to various diseases and should be planted in a long crop rotation.

Yields are moderate, with 40 bushels per acre a reasonable goal. The seed needs inoculation.

They require well-drained soils.

Seed needs to be rolled before feeding to livestock. There are limitations on the percentage of field peas in livestock rations. North Dakota State University has good information on utilizing field peas in livestock rations at the following internet site: <http://www.ag.ndsu.edu/pubs/ansci/livestoc/eb76w.htm>

Field peas are not readily marketable, but could be grown to sell direct to local livestock producers or used for on-farm feed.

Seed sources for well-adapted varieties are limited. Gristmill Enterprises, Inc in Warren, Illinois and Wolf River Valley Seeds of White Lake, Wisconsin are a couple options.

As a specialty crop, herbicides labeled for field peas may be hard to find.

Dry Field Pea feed economics

Value of Feed Peas (\$/Bu) Based on Corn and Soybean Meal Equivalency

Corn Price/ Bu	Soybean Meal Price per Ton								
	9.00/bu \$300	10.5/bu \$350	12/bu \$400	13.5/bu \$450	15/bu \$500	16.5/bu \$550	18/bu \$600	19.5/bu \$650	21/bu \$700
\$ 4.00	\$ 5.86	\$ 6.36	\$ 6.86	\$ 7.36	\$ 7.86	\$ 8.36	\$ 8.86	\$ 9.36	\$ 9.86
\$ 4.25	\$ 6.04	\$ 6.54	\$ 7.04	\$ 7.54	\$ 8.04	\$ 8.54	\$ 9.04	\$ 9.54	\$ 10.04
\$ 4.50	\$ 6.21	\$ 6.71	\$ 7.21	\$ 7.71	\$ 8.21	\$ 8.71	\$ 9.21	\$ 9.71	\$ 10.21
\$ 4.75	\$ 6.39	\$ 6.89	\$ 7.39	\$ 7.89	\$ 8.39	\$ 8.89	\$ 9.39	\$ 9.89	\$ 10.39
\$ 5.00	\$ 6.57	\$ 7.07	\$ 7.57	\$ 8.07	\$ 8.57	\$ 9.07	\$ 9.57	\$ 10.07	\$ 10.57
\$ 5.25	\$ 6.75	\$ 7.25	\$ 7.75	\$ 8.25	\$ 8.75	\$ 9.25	\$ 9.75	\$ 10.25	\$ 10.75
\$ 5.50	\$ 6.93	\$ 7.43	\$ 7.93	\$ 8.43	\$ 8.93	\$ 9.43	\$ 9.93	\$ 10.43	\$ 10.93
\$ 5.75	\$ 7.11	\$ 7.61	\$ 8.11	\$ 8.61	\$ 9.11	\$ 9.61	\$ 10.11	\$ 10.61	\$ 11.11
\$ 6.00	\$ 7.29	\$ 7.79	\$ 8.29	\$ 8.79	\$ 9.29	\$ 9.79	\$ 10.29	\$ 10.79	\$ 11.29
\$ 6.25	\$ 7.46	\$ 7.96	\$ 8.46	\$ 8.96	\$ 9.46	\$ 9.96	\$ 10.46	\$ 10.96	\$ 11.46
\$ 6.50	\$ 7.64	\$ 8.14	\$ 8.64	\$ 9.14	\$ 9.64	\$ 10.14	\$ 10.64	\$ 11.14	\$ 11.64
\$ 6.75	\$ 7.82	\$ 8.32	\$ 8.82	\$ 9.32	\$ 9.82	\$ 10.32	\$ 10.82	\$ 11.32	\$ 11.82
\$ 7.00	\$ 8.00	\$ 8.50	\$ 9.00	\$ 9.50	\$ 10.00	\$ 10.50	\$ 11.00	\$ 11.50	\$ 12.00

Assumption is that one bushel (60 lbs) of feed peas contains the equivalent protein and energy content of a blend of 20 lbs of soybean meal with 40 lbs of corn grain.

Corn: \$15.66/cwt, Soymeal: \$21.54/cwt (U.P. Ag Connections newsletter, March 2012)
Relative value of dry field peas = \$10.88/bu

This information from Gristmill Enterprises, Inc provides the relative value of dry field peas compared to corn and soybean meal at various prices.

At current U.P. prices for corn and soybean meal, dry field peas have a relative value of about \$10.88 per bushel.

Dry Field Peas in trials at Chatham



2006

2007

Variety	bu/A	Variety	Test wt.	Yield - bu/A	Cotyledon type
DS Admiral	40.4	Aragorn	63	31	Green
Eclipse	29.9	DS Admiral	63	33	Yellow
SW D 5021	37.7	K2	63	33	Green
SW C 5116	37.7	Majoret	63	30	Green
SW D 5211	37.3	Midas	64	31	Yellow
SW D 5212	31.8	Mean	63	32	
Mean	35.8	CV	1.1	11.2	
LSD (0.05)	3.5	LSD (0.05)	1.0	5.4	

These charts give the performance information for dry field peas in replicated, small plot trials at Chatham in 2006 and 2007. DS Admiral appeared to be a likely variety for central U.P. conditions.

Dry beans



- Several classes
- DRK currently grown in U.P. – climate adaptability is an issue
- Specialized field and handling equipment
- Quality issues
- Marketing skills needed
- Wildlife depredation
- Black beans
 - Hardy, high yielding, strong markets?

Dry edible beans have been grown in the U.P. for several years, mostly in Delta and Schoolcraft counties. Dark Red Kidney bean are the class most commonly grown in the U.P. However, black beans and pintos have also been grown.

Dry beans can be a profitable crop, but prices fluctuate. Unlike most other cash crop possibilities, dry beans are processed for human consumption. Quality factors like split seed, seed coat and color are important. Great attention to detail is needed to be a successful grower and marketer.

Deer like bean plants and can be a big problem.

Black beans are hardy and high yielding compared to some of the other classes of dry edible beans.

Sunflowers



1. Local markets only
2. Specialized field and handling equipment
3. “New” crop
4. Deer love these (so do birds)

Sunflowers have been grown by various U.P. farmers over the years. The black seeded types are most commonly used in bird seed.

Sunflowers can grow well in the U.P., but are extremely attractive to deer. They are vulnerable to white mold other diseases and must be rotated carefully. Specialized harvesting equipment is needed, as well as seed cleaning and bagging equipment to allow for local sales.

Canola



1. Extensive trials across U.P. 1986-2005
2. Deer damage worse on winter canola
3. Markets in MN, Canada
4. Emerging biodiesel market?
 - Sunpower Biodiesel, WI
 - Others?
5. Swathing required
6. Seed quality issues for high grade canola

Canola has been grown in trials and commercially around the U.P. for several years. Although winter canola has greater yield potential, it is more vulnerable to deer damage than spring canola. For this reason, U.P. farmers have preferred spring canola.

Commercial markets exist for canola in Minnesota and Windsor, Ontario. Emerging markets for biodiesel canola may make the crop more attractive to U.P. farmers. Biodiesel markets have less stringent quality specifications, but are likely to pay less per bushel.

Swathing is required before combining to allow more uniform ripening and reduce losses from shattering if direct combined.

2002 UP Spring Canola Variety Trials

1. Alger Co. (UPES)

- 9 varieties
- Average yield: 1,253 lbs/a
- Hi: 1,728 lbs/a -- Lo: 950 lbs/a

2. Iron Co.

- 9 varieties (same as UPES)
- Average yield: 856 lbs/a
- Hi: 1,020 lbs/a -- Lo: 709 lbs/a

1 bushel of canola = 50 lbs

March 1, 2012 cash price in N. Dakota = \$26.50/cwt (\$13.25/bu)

Spring canola variety trials in 2002 were established by MSU in Alger and Iron counties. Average yields in Alger County was 1,253 lbs per acre. Average yield in Iron County was 856 lbs per acre.

UPES Spring Canola Variety Trials 1986 - 1988

1. 3 varieties
2. 3-year average hi yield 1,581 lbs/a
3. 3-year average lo yield 967 lbs/a

U.P. Winter Canola Variety Trials (all locations) 1987 - 1988

- 2 varieties
- 2-year average hi yield 2,271 lbs/a
- 3-year average lo yield 2,138 lbs/a

Trials from 1986 – 1988 resulted in average high yield of 1,581 lbs/a and average low yield of 967 lbs/a for spring canola. Winter canola average high yield was 2,271 lbs/a and average low yield was 2,138 bu/a.

It should be noted that since there trials were conducted, nearly all commercial canola acreage consists of Round-up Ready canola, greatly simplifying weed control.

Other issues...

- No-till production
 - Equipment
 - Weed management
 - Rotation
- Organic production
 - Plant nutrients
 - Weed and disease management
 - Marketing

Other issues of interest to potential new cash crop producers include the need for special equipment, including no-till equipment.

No-till management requires special attention to weed control and rotation.

People considering organic production of commodity grain crops should research the topics of organic certification and markets. Think through your possible sources of nutrients that will be acceptable to certifying agencies.

Enterprise budgeting

Sample budgets

Wheat

Oats

Barley

Dry field peas

Enterprise budgets which can be easily altered to reflect your own projected costs and sale prices can be accessed at the Alger County MSU Extension portal site at:

www.msue.msu.edu/alger

Look on the left vertical banner for “Agricultural Presentations and Documents by Jim Isleib...” click on it, then click on “U.P. Enterprise Budgets – winter wheat, oats, barley, dry field peas”