GROWING MALTING BARLEY IN NY

Mike Stanyard, Cornell Cooperative Extension

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WHY THE NEW INTEREST IN NY?

- Not a new crop for NY
- Diseases issues, Prohibition
- Small local craft breweries
- Rejuvenated beer industry
- Farm Brewery License Bill

WHAT IS CORNELL'S ROLE?

- **Research and Education** ☆
- Determine best management practices for malting barley
- Identify the right varieties
- Fertility recommendations
- Identify pest management needs
- Harvest, drying and storage needs

MALTING BARLEY VARIETIES

- No NY varieties
- Relying on other states and Canada
- Replicated variety trials 2013 -2015
- Used to make current recommendations
- Working with seed industry
- Takes about 15 years to develop new variety

MALTING BARLEY SPECIFICS

- Different than feed barley!
- **Winter and Spring varieties**
  - **Winter:** short stature, lower protein potential, can winterkill
  - 60-80 bu/a
  - **Spring**: taller stature, can lodge
  - 40-60 bu/a
- **2 row vs 6 row**
  - **2-row:** more uniform kernels
    - brewer's preference
  - **6-row:** better agronomically


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2015 Winter Malting Barley Summary

		Grain Yield			TW		Lodg	Height	Head	Wint	Wt	6/64"	Malt Ext.	Protein	DP	Beta Glucan	FAN	Qual
		4 yr	3 yr	2 yr	2 yr		0-9	cm	Date	Surv	(mg)	(%)	(%)	(%)	ASBC	ppm	ppm	Score
Entry	Row	b/a	b/a	b/a	kg/hl	lb/b	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr
Charles	2	55	46	41	56.2	43.9	3.5	51	6/3	63	38	96	80.9	11.9	112	152	236	43
Saturn*	6	90	72	66	57.7	45.0	1.9	55	5/31	66	40	96	74.2	11.4	93	540	142	20
10467r4	6	76	56	45	54.7	42.7	2.2	53	5/31	53	38	98	80.2	11.5	96	92	200	45
KWS Scala	2	71	54	50	58.7	45.9	1.4	56	6/4	68	47	99	80.1	11.8	110	90	194	47
Sy Tepee	2	73	56	51	59.6	46.6	1.6	52	6/5	62	48	98	80.4	12.4	168	42	198	62
SY Mezmar	2	72	55	50	59.5	46.5	1.6	57	6/8	53	43	96	80.4	10.9	100	64	167	47
WintMalt	2		43	38	53.2	41.5	1.1	54	6/8	56	44	98	79.2	12.4	89	34	260	52
6Ab08-X03W012-5	6			65	60.9	47.6	2.2	71	5/29	74								
2Ab08-X05W061-208	2			46	51.0	39.9	2.9	47	6/8	64								

* feed barley

M. E. Sorrells, D. Benscher, J. Shiffer, J. Tanaka – Dept. of Plant Breeding and Genetics, Cornell University

Acknowledgement of Funding Sources:
New York State Ag & Markets
Genesee Valley Regional Marketing Authority
New York Farm Viability Institute

2015 Spring Malting Barley Summary

		Grain Yield		TW	Head	Lodge	Height	Kernel Wt.	6/64	Malt Extract	Protein	DP	Beta Glucan	FAN	Quality
		2 yr	3 yr		Date	0-9	cm	(mg)	%	%	%	ASBC	ppm	ppm	Score
Entry	Row #	b/a		lbs/b	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr	2 Yr
Herta	2	68	65	49.8	6/26	1.9	73	36.8	91.9	79.4	11.7	82	264	209	36
Conlon	2	53	54	47.9	6/18	3.6	61	38.4	96.2	81.1	11.5	96	253	213	46
Lacey	6	66	66	47.6	6/19	1.7	70	31.5	91.4	80.5	11.3	99	115	257	48
Quest	6	68	66	47.5	6/19	3.3	77	31.1	86.3	80.2	11.3	108	272	239	47
Cerveza	2	56		45.9	6/21	1.3	60	34.8	87.4	82.5	11.1	69	67	271	41
Newdale	2	57		46.1	6/21	0.9	62	33.7	85.5	81.1	11.6	83	68	262	37
AAC Synergy	2	65		46.0	6/20	0.9	64	36.5	92.5	81.9	10.7	56	31	285	43

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PLANTING MALTING BARLEY

- Well to moderately well drained soils
- pH – 6.3 and higher
- Plant 1-1.5” deep
- Appox. 2 bu/acre
- 48 lbs./bu = 96 lbs./acre
- Drill works best
- Winter: mid Sept. – mid Oct.
- Spring: early as possible

FERTILITY

- P and K to soil test recommendations
- Winter barley should receive 10-20 lb./A of nitrogen and 10-25 lb./A of P_2O_5 (in furrow) at planting
- DAP or MAP
- K not as important as P for early development,
- overwintering and yield determination
- Important for stalk strength and overall plant health

NITROGEN

- Want to keep protein between 9-12.5%
- Need an optimal amount of N:
  - Spring: 30-60 lbs./acre
  - At planting
  - Winter: 60-90 lbs./acre
  - Apply early in season at green up
- Optimal N may be a balance of soil type, OM in soil, manure and previous crop
- Too much N = high protein % and possible lodging

DISEASE MANAGEMENT

- Some foliar diseases –Scald
- Fusarium Head Blight (FHB) is the most important
- Reduce germination and yield – shrunken kernels
- Source of DON (vomitoxin)
- Pink kernels

FHB ON WHEAT AND BARLEY

FUSARIUM MANAGEMENT

- Reduce residue that contains the fungus
  - Tillage
  - Crop Rotation: Do not plant after corn!
- Resistant Varieties
  - None, more work needs to be done
  - Conlon and Quest offer some resistance
- Caramba or Prosaro must be applied at pollination for FHB suppression (50%)
  - **Flowers as head is coming out of the boot!**


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FUSARIUM HEAD BLIGHT Prediction Center

FUSARIUM RISK Assessment Tool

- Home
- About
- Prediction
- Model
- Fusarium

US Commentary *last update 2012-08-02* Tom Auer,

Some tips for using the application: - Follow the steps to map the risk for state, model, and date. - Click the query button near the bottom left and then click on the risk map to get risk at any location. - After selecting a state, make sure that a Weather Stations layer is checked on, and then click a station to get risk for that station.

1. Choose a State

State: Help

2. Choose a Model

Wheat: Spring Winter ?

Susceptibility

Link to Spring Wheat Variety Info Sheet

3. Forecast Mode

Forecast (hrs): 0 24 48 72

Assessment Date: 08/03/2012 ?

7/27 7/28 7/29 7/30 7/31 8/1 8/2 8/3

Advanced: Save Model and Location

Name: Save As New

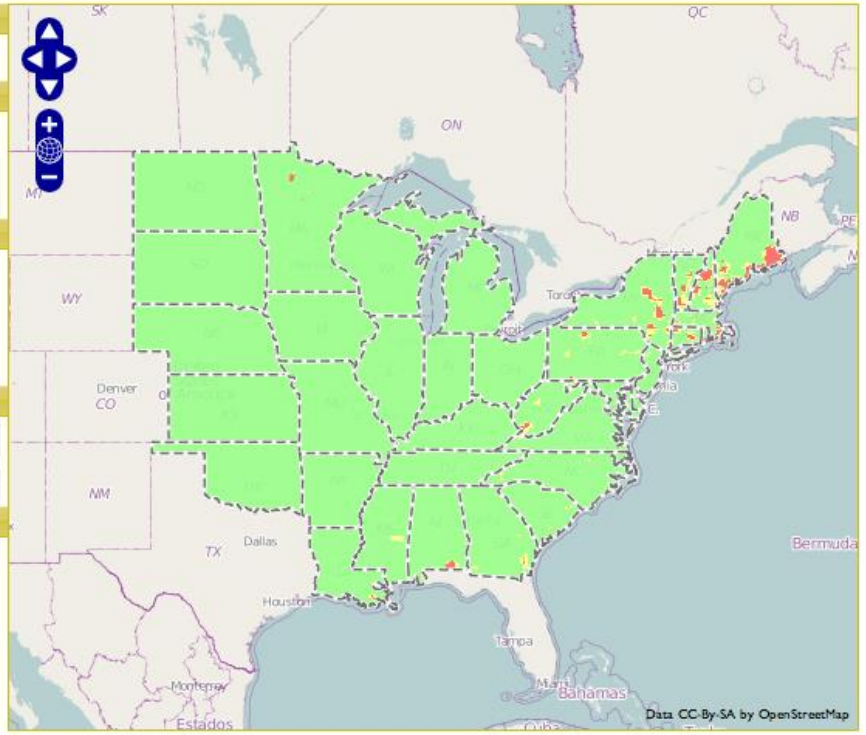
Saved Locs: Delete

Legend

Blight Risk
- High
- Medium
- Low
- No Data

Weather Stations
- FAA
- AgNet
- Inactive (for model)

Risk Opacity Query



PENNSTATE · THE OHIO STATE UNIVERSITY EXTENSION · K-STATE Kansas State University · USWBSI

WEED CONTROL

- Herbicides – for broadleaf weeds
  - Harmony products
  - 2,4-D, and MCPA mixtures
  - If using 2,4-D apply prior to stem elongation
  - No grass products labeled in NY
- Organic systems-2 passes with a flex tine weeder
  - prior to barley germination
  - 2 leaf stage

HARVESTING

- Do not treat like wheat!
- Harvest at 18-20% moisture, avoids pre-germination
- Slow down ground and reel speed to minimize kernel damage
- Add front cover plates or debearding bars to the combine's concave
- Clean grain to increase quality

DRYING MALTING BARLEY

- Dry with air or low heat (5-10°F above ambient temperature) keeping the grain temperature below 100°F maximum.
- Barley is the only crop that needs to be delivered in a "Living State".
- High germination for malting
- Store at 12-13% moisture

MALTING QUALITY STANDARDS

- Brewing market is very stringent!
- 9-12.5% protein
- >95% germination
- <1ppm DON
- NY growing conditions don't help
- Timely management is crucial for success!

GRAIN QUALITY ANALYSIS

Lab ID	Sample Description	Grain Moisture	Test Weight	Flour Moisture	* As-Is Protein	DM Protein	Falling Number	DON
		%	lbs/bu	%	%	%	seconds	ppm
C577	Danko Rye	**14.0**	55	10.2	10.8	11.6	281	0.7
C578	Conlon 2-row	10.9	**43.3**	8.6	10.7	11.2	**132**	0.9
C579	Wintmalt 2-row	10.7	46.2	9.4	9.3	10.0	**144**	**1.2**
C580	Quest 6-row	16.4	48.3	9.8	**13.9**	14.3	366	<0.5

*University of Vermont Cereal Grain Testing Lab

NEW BARLEY QUALITY TESTING FACILITY IN NY

- *Hartwick College*
- *Center for Craft Food and Beverage*
- *Aaron MacLeod, Director*

Barley Selection Package
(Moisture, Protein, Plumpness, Kernel Weight, Germination Energy, RVA, & DON)

$75/sample

- *http://www.hartwick.edu/about-us/centers-institutes/center-for-craft-food-and-beverage/barley-quality-testing/*

ACTIVE MALTHOUSES IN NY

East Coast Malts, Dryden
Farmhouse Malt, Newark Valley
Germantown Beer Farm
Niagara Malt, Cambria
NY Craft Malt, Batavia
Pioneer Malting Inc, Rochester
Queen City Malting, Buffalo

MORE INFO ON MALTING BARLEY

- Go to: http://fieldcrops.cals.cornell.edu/small-grains/malting-barley
- Contact info for all active malt houses
- What varieties of spring and winter malting are available locally
- Ten keys to successful malting barley production in NY

FINAL WORDS OF ADVICE

- **Do not plant malting barley until you have talked to a malthouse!**
- Find out what varieties they prefer
- Discuss what their quality standards are
- Discuss expectations and risks for both sides
- Storage and delivery needs
- Acres, price and **CONTRACTS**!

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M. Stanyard

Mike Stanyard

mjs88@cornell.edu

Cell: 585-764-8452