

Danish Preferred 

DANISH MALTING BARLEY

Catalogue 2018

Introduction

The Danish Preferred Committee welcomes you to the 2018 Danish Malting Barley Catalogue version 1. In this catalogue, you will find a short presentation on the varieties which have finished their Industrial Test in 2018.

Further information on the program and full dataset for both Stress- and Industry Test can be accessed via <https://danishpreferred.com/>

Danish Preferred approved varieties

Danish Preferred Approved Varieties			
Variety	Breeder	Year of approval	Page
Evergreen	Nordic Seed	2017	*
KWS Irina	KWS	2017	*
Odyssey	Limagrain	2017	*
Propino	Syngenta	2017	*
Quench	Syngenta	2017	*
RGT Planet	RAGT	2017	*
Crossway	Nordic Seed	2018	6
Flair	Sejet	2018	7
Laureate	Syngenta	2018	8

*Pre-approved variety – well known and accepted by malting and brewing industry

Short description of program

Preconditions for application:

- Two years results from either Danish Official Testing or Farmer Union Trials.
- Two years of micro malting performed at VLB with samples and application through the Tystofte Foundation.
- Minimum 5 tons of seed available at application.

Stress Test:

- Micro malting from three locations under variable conditions: Steeping degree 45%, 43%, 41%; germination temp. 18/14,5°C; 5 days germination; isothermal mashing at 65 °C.
- The applicants will be invited to present the candidate varieties for the committee and comment on the results from stress test/micro malting.

Industry Test:

- Large scale malting at the two Danish malting companies (Viking Malt and Fuglsang) and one large scale malting at one of the other partners in the program (currently: Avangard Malz, Cargill, CRISP Malting Group, Holland Malt, Malteurop, Soufflet)
- Brewing test at three breweries in Denmark or abroad.
- The industry step will have to be completed during either one or two seasons.

Final approval:

- Before final approval, a multiplication acreage of 500 hectares is required.

Distribution of Industry Tests

Variety	Variety owner and representative			Large scale malting and brewing																			
				Grain lots from crop																			
				2016		2017						2018			2019								
				Brewery																			
				Malting plant																			
				Fuglsang, DK	Viking Malt, DK	Fuglsang, DK	Viking Malt, DK	Cargill, NL	Tivoli/Crisp Malting, DE	Holland Malt, NL	Malteurope, DE	Soufflet, PL	Fuglsang, DK	Viking Malt, DK	tdb	Fuglsang, DK	Viking Malt, DK	tdb					
				Breeder	Applicant	Supplier	Carlsberg Obernai pilot, FR	Fuglsang, DK	Carlsberg, SE	Carlsberg Obernai pilot, FR	Carlsberg, NO	Not found	Abroad to be found	Bavaria, NL	Javier, DE	Not found	Fuglsang, DE	Carlsberg tdb	tdb	Fuglsang, DK	Carlsberg tdb	tdb	
Tests to be performed with grain lots from crop 2016 and 2017																							
CROSSWAY	Nordic Seed	Nordic Seed	DLA/Danish Agro		X	X									X								
FLAIR	Sejet	Sejet	DLG	X					X	X													
KWS FANTEX	KWS	KWS	Nielsen og Smith	X					X		X												
LAUREATE	Syngenta	Sejet	DLG			X	X								X								
Tests to be performed with grain lots from crop 2017 and 2018																							
CHANSON	Ackermann	Nordic Seed	DLA/Danish Agro						X						X	X							
COSMOPOLITAN	Sejet	Sejet	DLG			X											X	X					
EMBRACE	Sejet	Sejet	DLG			X																	Withdrawn
KWS BECKIE	KWS	Nordic Seed	DLA/Danish Agro				X																Withdrawn
KWS CANTTON	KWS	KWS	Hornsyld/Ewers			X																	Withdrawn
Tests to be performed with grain lots from crop 2018 and 2019																							
ELLINOR	Saatzucht Josef Breun	Nordic Seed	DLA/Danish Agro													X	X	X					
CHAMP	Sejet	Sejet	DLG													X				X	X		
PROSPECT	Sejet	Sejet	DLG													X					X	X	
APPLAUS	Sejet	Sejet	DLG																X	X	X		

VARIETY NAME: CROSSWAY

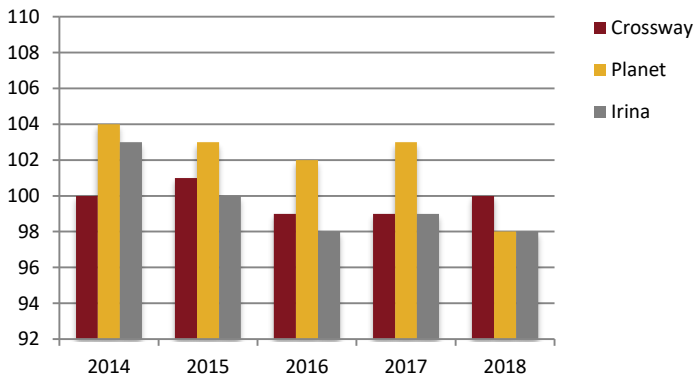


GENERAL INFORMATION

Variety: Crossway
 Type: Two row spring malting barley
 Breeder: Nordic Seed, Denmark
 Representative: Nordic Seed, Denmark
 Distributer: DLA
 Pedigree: Quench x (Perdita x Titan)
 Status: 736 ha multiplication in DK in 2018
 Geography: DK, DE and the Baltics

AGRONOMY

Data from Danish Official and National trials.
 Relative yield index.



Data from Danish National Trials 2014-2018	Irina/Planet	Crossway
Relative yield %	101	100
Protein %	10,7	10,7
Grading >2,5mm %	97	96
Grading >2,8mm %	86	84
Specific weight (hl/kg)	66,7	67,5
Maturity	02 Aug	02 Aug
Straw length in cm	60	63
Lodging (0-10, 1 is best):	0,3	1,6
Straw breaking (0-10, 1 is best)	3,1	6,1
Mildew (% coverage)	0	0
Barley rust (% coverage)	12	14
Skald (% coverage)	3,4	0,9
Net Blotch (% coverage)	1,3	3,3

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VLB MICRO MALTING

Stress test crop 2017 at 41%, 43% and 45% steeping degree. Tested variety is compared to the two largest malting barley varieties in Denmark for crop 2017.

	KWS Irina_45	KWS Irina_43	KWS Irina_41	RGT Planet_45	RGT Planet_43	RGT Planet_41	Crossway_45	Crossway_43	Crossway_41
Extract	3	3	3	3	4	4	2	2	3
Friability	3	4	5	2	3	5	1	1	2
Beta-Glucan	2	4	5	2	3	5	1	1	2
Viscosity	2	3	5	1	2	4	1	1	2
FAN	2	2	3	2	2	3	3	3	3
Soluble N	2	2	3	2	2	3	3	2	2
Kolbach	2	3	3	2	2	3	2	2	3
Alpha-Amylase	4	4	4	1	2	3	3	3	4
Beta-Amylase	1	1	2	1	1	1	5	5	5
Limit Dextrinase	1	2	3	1	2	2	2	2	3
Attenuation	1	2	2	1	1	2	2	3	3
Turbidity	1	2	1	3	4	3	5	4	4

Positive:

- Good extract level at all steeping levels
- Very good malt modification values

Negative:

- Very poor Beta-amylase level!
- Very high wort turbidity!

INDUSTRY MALTING

Comments to malted barley lots:

- No comments to appearance of barley – and only “low to medium level” of Skinned Grains found
- Average Germination Energy in malted barley lots
- Below average barley screening >2,8 mm
- High specific weight for barley from Danish crop 2016

Malt results - Positive:

- High extract level in malt - but also “low to medium” level of Skinned Grains in the barley!
- Well modified malt expressed by good betaglucan level and friability values

Malt results - Negative:

- All tests found high level of soluble nitrogen in the produced malt. – This could be problematic or positive depending on maltsters preference!
- A low beta-amylase level in the malt was partly confirmed in the full scale industry malting tests

INDUSTRY BREWING

Brew house:

- In one of the trials additional deepcuts and wort collection time was needed.
- Brewhouse loss in one test reported to be slightly higher than normal.

Fermentation and filtration:

- As normal

Packaged beer:

- As normal

RECOMMENDATION

Crossway is an average yielding malting barley variety with average agronomic features – however tendency to slightly higher than average straw breaking. Barley grading in terms of grain fraction >2,8 mm was found to be normal in National Trials, but below average in the malted barley lots. Maltsters will need to be aware of the very high level of soluble nitrogen in produced malt. This characteristic could be problematic or positive depending on maltsters preference! Limit attenuation level was found to be normal even through the beta-amylase level is consistently low.

VARIETY NAME: FLAIR

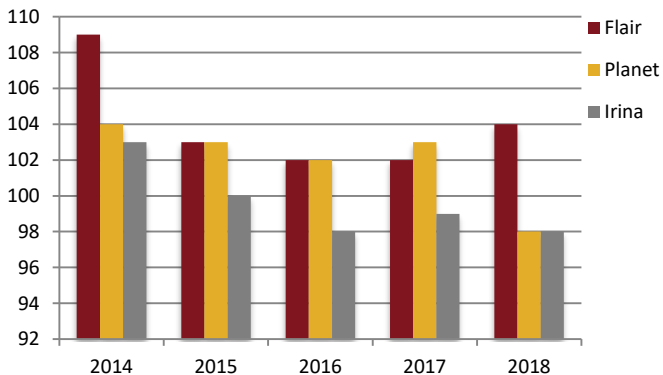


GENERAL INFORMATION

Variety: Flair
 Type: Two row spring malting barley
 Breeder: Sejet, Denmark
 Representative: Sejet, Denmark
 Distributer: DLG
 Pedigree: Dacapo x (Tamtam x Overture)
 Status: 2.680 ha multiplication in DK in 2018
 Geography: DK, SE, PL and ES

AGRONOMY

Data from Danish Official and National trials.
 Relative yield index.



Data from Danish National Trials 2015-2018	Irina/Planet	Flair
Relative yield %	100	103
Protein %	10,9	10,9
Grading >2,5mm %	96	95
Grading >2,8mm %	85	77
Specific weight (hl/kg)	66,7	66,8
Maturity	03 Aug	02 Aug
Straw length in cm	59	58
Lodging (0-10, 1 is best):	0,7	1
Straw breaking (0-10, 1 is best)	3	2,8
Mildew (% coverage)	0	0
Barley rust (% coverage)	12	10
Skald (% coverage)	2,5	4,3
Net Blotch (% coverage)	1,6	0,1

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VLB MICRO MALTING

Stress test crop 2017 at 41%, 43% and 45% steeping degree. Tested variety is compared to the two largest malting barley varieties in Denmark for crop 2017.

	KWS Irina_45	KWS Irina_43	KWS Irina_41	RGT Planet_45	RGT Planet_43	RGT Planet_41	Flair_45	Flair_43	Flair_41
Extract	3	3	3	3	4	4	2	3	1
Friability	3	4	5	2	3	5	1	2	2
Beta-Glucan	2	4	5	2	3	5	1	1	2
Viscosity	2	3	5	1	2	4	1	1	1
FAN	2	2	3	2	2	3	3	3	2
Soluble N	2	2	3	2	2	3	2	2	2
Kolbach	2	3	3	2	2	3	2	2	2
Alpha-Amylase	4	4	4	1	2	3	1	1	2
Beta-Amylase	1	1	2	1	1	1	2	2	3
Limit Dextrinase	1	2	3	1	2	2	1	1	3
Attenuation	1	2	2	1	1	2	2	4	3
Turbidity	1	2	1	3	4	3	3	3	2

Positive:

- Good extract level at all steeping levels
- Very good malt modification values
- Well balanced proteolytic activity

Negative:

- Low attenuation at steeping degree 43%

INDUSTRY MALTING

Comments to malted barley lots:

- No comments to appearance of barley – however high level of Skinned Grains was noticed as it was often for barley from crop 2017
- High Germination Energy in malted barley lots
- Barley screening >2,8 mm average to slightly low
- Low but still better than average specific weight for barley from Danish crop 2017

Malt results - Positive:

- Well modified malt expressed by good betaglucan level and low viscosity values
- Very high enzymatic level in malt

Malt results - Negative:

- No significant negative values found for tested parameters

INDUSTRY BREWING

Brew house:

- Good lautering/wort collection
- Brewhouse loss in one test reported to be slightly higher than normal

Fermentation and filtration:

- Final Attenuation nicely high
- Good low beer haze
- Good beer filtration

Packaged beer:

- As normal

RECOMMENDATION

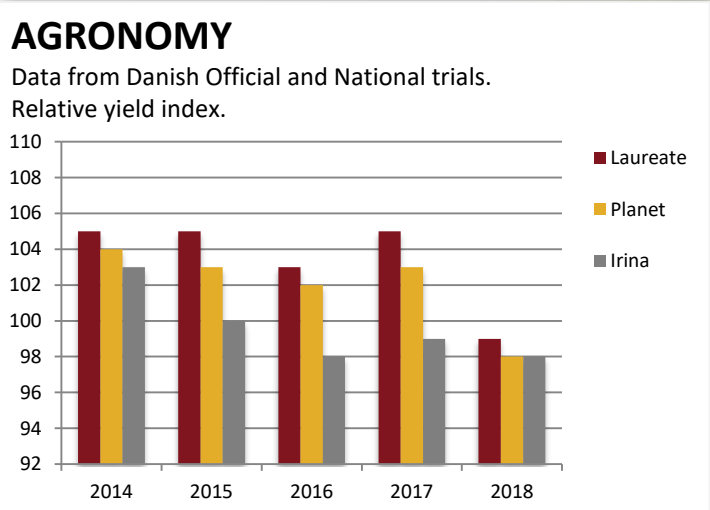
Flair is a very high yielding malting barley variety with good agronomic features. Barley grading in terms of grain fraction >2,8 mm could be better. Good modification, high enzymatic level and good Final Attenuation in produced malt and beer.

VARIETY NAME: LAUREATE



GENERAL INFORMATION

Variety: Laureate, Non GN variety
 Type: Two row spring malting barley
 Breeder: Syngenta, Germany
 Representative: Sejet, Denmark
 Distributer: DLG
 Pedigree: Sanette x Concerto
 Status: 1.152 ha multiplication in DK in 2018
 Geography: DK, UK, SE, F, PL, DE, IR and LT



Data from Danish National Trials 2014-2018	Irina/Planet	Laureate
Relative yield %	101	104
Protein %	10,7	10,6
Grading >2,5mm %	97	97
Grading >2,8mm %	86	89
Specific weight (hl/kg)	66,7	66,4
Maturity	02 Aug	02 Aug
Straw length in cm	60	61
Lodging (0-10, 1 is best):	0,6	0,7
Straw breaking (0-10, 1 is best)	3,1	4,1
Mildew (% coverage)	0	0
Barley rust (% coverage)	12	6
Skald (% coverage)	3,4	1,7
Net Blotch (% coverage)	1,3	0,04

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VLB MICRO MALTING

Stress test crop 2017 at 41%, 43% and 45% steeping degree. Tested variety is compared to the two largest malting barley varieties in Denmark for crop 2017.

	KWS Irina_45	KWS Irina_43	KWS Irina_41	RGT Planet_45	RGT Planet_43	RGT Planet_41	Laureate_45	Laureate_43	Laureate_41
Extract	3	3	3	3	4	4	1	1	3
Friability	3	4	5	2	3	5	2	3	5
Beta-Glucan	2	4	5	2	3	5	2	3	5
Viscosity	2	3	5	1	2	4	1	2	3
FAN	2	2	3	2	2	3	3	3	3
Soluble N	2	2	3	2	2	3	2	2	3
Kolbach	2	3	3	2	2	3	2	2	3
Alpha-Amylase	4	4	4	1	2	3	1	2	3
Beta-Amylase	1	1	2	1	1	1	2	2	2
Limit Dextrinase	1	2	3	1	2	2	2	3	4
Attenuation	1	2	2	1	1	2	1	1	5
Turbidity	1	2	1	3	4	3	2	2	1

Positive:

- Good extract level at all steeping levels
- Good malt modification values

Negative:

- Low attenuation at steeping degree 41%

RECOMMENDATION

Laureate is a very high yielding malting barley variety with good agronomic features. Barley grading in terms of grain fraction >2,8 mm is good. Laureate was found to be slightly difficult in regards to malt modification. Notice that Laureate is a Non-GN variety! Very high enzymatic level and high Attenuation in produced malt. Good brewery performance found through all trials.

INDUSTRY MALTING

Comments to malted barley lots:

- No comments to appearance of barley and low level of Skinned Grains compared to general level of crop 2017
- High Germination Energy in all malted barley lots
- Very good screening >2,8 mm
- High Water Sensitivity noticed

Malt results - Positive:

- Generally high extract levels in all trials
- Very high alpha-amylase activity found in one of the trials and better than average beta amylase levels found generally
- High Attenuation

Malt results - Negative:

- Below average malt modification expressed by betaglucan level and friability values

INDUSTRY BREWING

Brew house:

- Very good wort collection reported - Good laureating behavior
- Good extract yield in the brew house reported

Fermentation and filtration:

- As normal

Packaged beer:

- As normal