Your future in the plant®

BREUN

FLEXI-MALT®

REDUCES CARBON FOOTPRINT

BRED BY BREUN

The story of "Flexi-Malt"-quality

- 1975 Josef Breun started to cross with wild barley germ plasm from Israel to get new genetic backgrounds into his genetics
- First variety out of this project: MARNIE, registered 2002
- New genetic significantly improved malting quality
- MARNIE's unbalanced malting quality was solved by next "Flexi-Malt" generation
- State-of-the-art "Flexi-Malt" varieties :
  - 2nd generation: SUNSHINE, AVALON, LEANDRA
  - 3rd generation: international newcomer LEXY!

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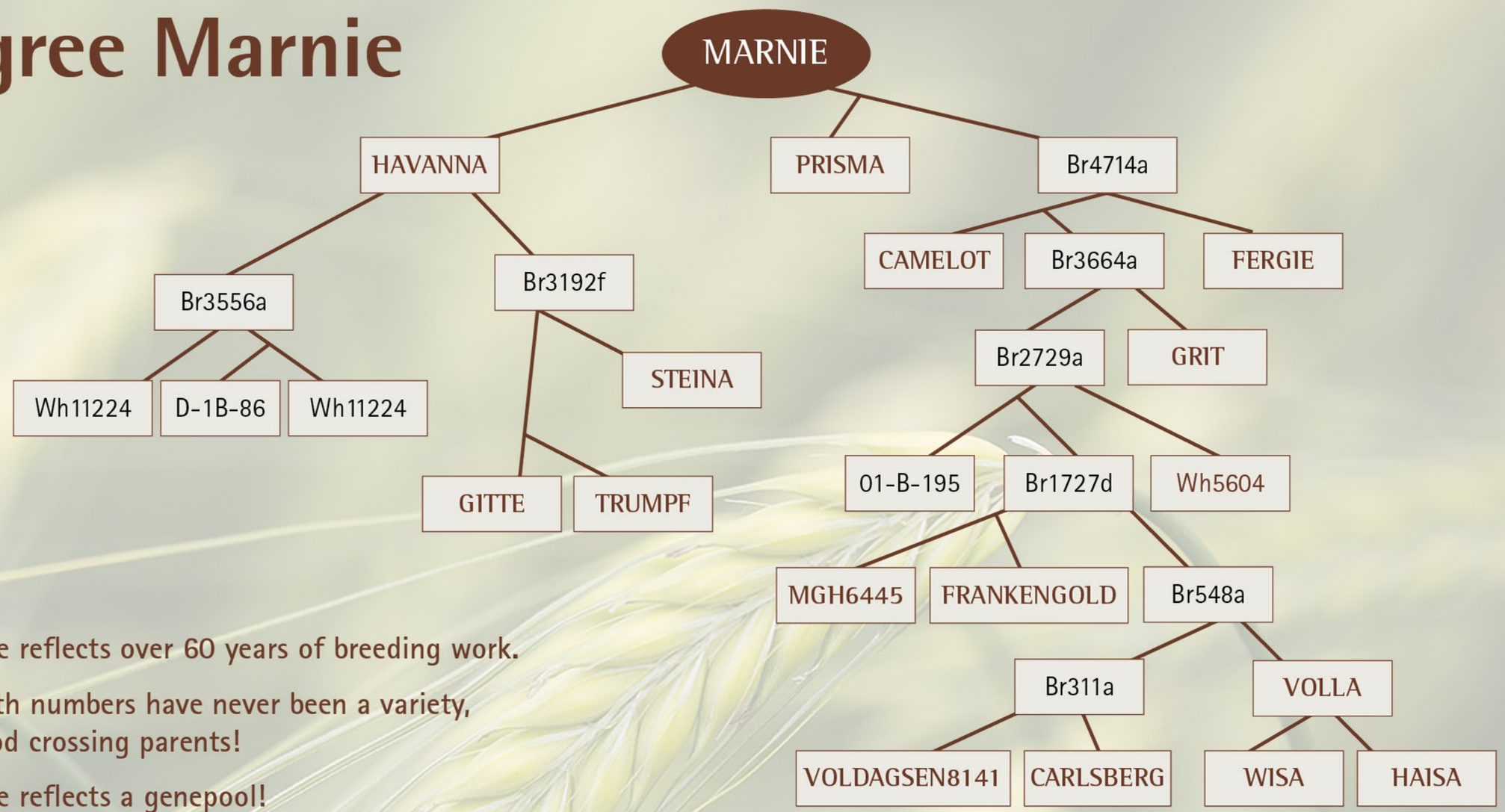
Pedigree Marnie



This pedigree reflects over 60 years of breeding work.

The lines with numbers have never been a variety, but very good crossing parents!

This pedigree reflects a genepool!

AVALON: "Flexi-Malt"

Comparison between a standard modification to a high modification variety

	Standard variety Quench								Flexi-Malt variety AVALON							
Germination temperature	Temp.: 18 - 14°C				Temp.: 14,5°C				Temp.: 18 - 14°C				Temp.: 14,5°C			
Steep out moisture [%]	45	43	41	39	45	43	41	39	45	43	41	39	45	43	41	39
Extract [% dm]	83,6	83,7	83,4	83,6	84,1	84,3	84,1	83,7	83,4	83,3	83,2	83,2	83,7	83,5	83,9	84,1
Viscosity (8.6 %) [mPa*s]	1,50	1,54	1,59	1,59	1,49	1,54	1,60	1,64	1,45	1,46	1,48	1,49	1,45	1,46	1,49	1,52
Viscosity VZ 65°C (8.6 %)	1,54	1,62	1,71	1,76	1,55	1,65	1,75	1,89	1,47	1,48	1,51	1,53	1,47	1,49	1,54	1,58
Protein [% dm]	9,0	9,2	9,5	9,7	9,2	9,4	9,7	9,3	11,1	10,5	10,9	11,0	10,6	10,8	11,0	11,2
Soluble N [mg/100 g dm]	595	576	545	528	643	619	604	561	721	729	693	664	771	749	748	712
Kolbach Index / SNR [%]	41	39	36	34	44	41	39	38	41	44	40	38	45	43	43	40
Friability [%]	97	91	83	78	95	87	77	72	95	95	91	90	95	94	87	86
Partly unmodified grains [%]	0,5	1,2	4,5	8,6	0,1	2	9,7	13,4	0,2	0,6	0,8	1,4	0,3	0,4	1,5	2,2
Beta Glucan [mg/100g]	162	362	520	594	238	450	578	636	66	64	128	276	72	122	258	400
Alpha-Amylase [DU/g dm]	58	58	50	50	57	62	64	52	97	81	85	89	92	91	83	81
Beta-Amylase (BU/g dm]	1137	965	946	1068	1037	967	988	1028	1478	1394	1461	1562	1359	1370	1248	1444
Diastatic Power [°WK]	370	324	319	352	343	325	330	341	461	439	457	484	429	432	400	452
Real steep out moisture [%]	44,4	42,6	40,7	38,6	44,9	42,6	41,0	39,3	44,5	42,8	40,8	39,0	44,4	42,7	41,0	38,9
Malting losses [%]	10,8	9,3	7,5	6,0	9,5	8,2	6,9	5,1	10,0	8,4	7,3	5,7	8,6	7,5	6,4	4,7

Standard variety requires 45% steep out moisture whereas "Flexi-Malt" variety permits 10% less to achieve e.g. the same beta glucan level.

Malting losses are significantly reduced!

What is the secret behind "Flexi-Malt"?

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- steeping with > 10% moisture content compared to standard varieties possible without capacity losses
- malting with continuous steep-out moisture can be done >15% faster compared to standard malting barleys
- high enzymatic equipment leads to balanced starch protein and cell wall degradation, e.g., low ß-glucan content
- "Flexi-Malt" varieties don´t need any additional external enzymes for creating high value malt and beer

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"Flexi-Malt" benefits for the maltsters:

2

- lower production costs per ton of malt
  ~ 2/3 via lower final loss
  ~ 1/3 via less kilning due to lower water content
- possible higher malt capacity due to faster malting (up to 25%), constantly or in peak season
- brewery specifications are easier achieved even with barley protein >11,5% without capacity losses

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"Flexi-Malt" benefits for the farmer:

3

- easier sales of Flexi-Malt malting barley to trader/maltster
- easier sale of malting barley with protein > 11,5%
- better use of malting variety yield potential via possibility of higher N-fertilizer use

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"Flexi-Malt" benefits for the brewers:

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- up to 15% lower "Carbon-Foot-Print" per liter beer
- no additional "artificial" enzymes needed
- optimal for beer to be brewed under German "Reinheitsgebot"
- optimal taste and a full bodied beer if malt has been produced with reduced steep-out moisture

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"Flexi-Malt": where are the limits?

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- Barley protein contents significantly below 10,0 % maybe lead to malt that will not fit into specifications (sol.N, FAN, etc.) when processed with lower steep-out moisture
- more N fertilization should be used in "critical regions" to avoid too low protein contents
- Farmers should take care of high stiffness of "Flexi-Malt" varieties in regions with critical N-situation
- for optimal taste and a full bodied beer, better not to exhaust the full water reduction potential during steeping

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It´s your choice –

Quality malting barley

for a sustainable world!

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Saatzucht BREUN

- Successful malting barley breeding since1906
- Legendary varieties: **ALEXIS®, SCARLETT®, BARKE®**
- **Flexi-Malt®** varieties: **AVALON, LEANDRA** and **new: LEXY**

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