THE MAIZE VARIETY
SELECTION GUIDE

BSPB/NIAB DESCRIPTIVE LISTS 2024
MAIZE FOR GRAIN, FORAGE AND ANAEROBIC DIGESTION

Limagrain

INDEPENDENT DATA TO AID VARIETY CHOICE

Introduction

Welcome to the new LG maize variety selection guide for spring 2024. Limagrain are proud to participate in the BSPB/NIAB testing of maize varieties and we encourage you to use the independent data in this publication when making variety decisions.

You may be aware that new legislation has been proposed to stop access to seed treatments not registered for use in the UK (something that was not necessary pre-Brexit). Limagrain has been at the forefront in leading the lobbying action to government to ensure UK growers continue to have access to seed treatments for the future. At time of writing, the outcome will not be fully known until December 2023, but we remain confident that growers will continue to have the vital seed treatments to prevent bird and disease damage available for sowing spring 2024.

Wishing you a good growing season ahead.

Tim Richmond

LG Maize Product Manager UK and Ireland

Maize variety choice simplified

Getting maize variety choice wrong can be costly in terms of missed opportunity to produce the maximum feed energy from the crop. The LG Variety Selection Guide aims to make it easier for you to interpret the valuable independent data available to help you make the correct variety choice.

This guide includes data on the new varieties added to the 2024 BSPB/NIAB Descriptive Lists for Forage Maize and Anaerobic Digestion, allowing comparison to those already established in the market.

Independent data from BSPB/NIAB

This guide uses the Descriptive List data which is created from independent trials jointly carried out by NIAB and the British Society of Plant Breeders (BSPB). Varieties usually complete five years of testing, at up to nine locations within the UK. The data represents a varying range of growing and seasonal conditions, giving a very good indication of each varieties' potential.

We hope you will find this guide useful in helping you make an informed decision as to which maize varieties best suit both your growing conditions and expected feeding value of the resulting crop.

WHAT DO YOU WANT FROM YOUR MAIZE?

GET THE BASICS RIGHT - MATURITY CHOICE THAT SUITS YOU

Avoiding soil compaction issues at harvest

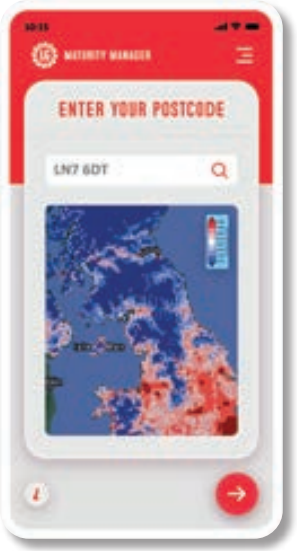
Having to wait for later maturing maize varieties to be ready to harvest can cause serious problems with soil compaction, which results in surface water run-off and erosion in wet autumn conditions. This can be avoided by choosing a suitably early maturing variety to harvest in September, allowing time for field work to be carried out, or to establish a follow-on crop.

Use the Maturity Manager section in the app!

It is critical to choose the right maturity range for your situation. You must avoid harvesting in unpredictable conditions in October that could lead to compaction and damage soil structure.

The Maturity Manager section of the app can provide you with the recommended FAO range for your farm by simply inputting your postcode. Further advice on suitable varieties to use within this maturity range is also available.

Download from the Apple or Google store.



Using the LG Heat Map Tool

The LG Heat Map Tool has been developed by Limagrain, in conjunction with The Met Office to provide quick and easy advice for selection of appropriate maturing varieties.

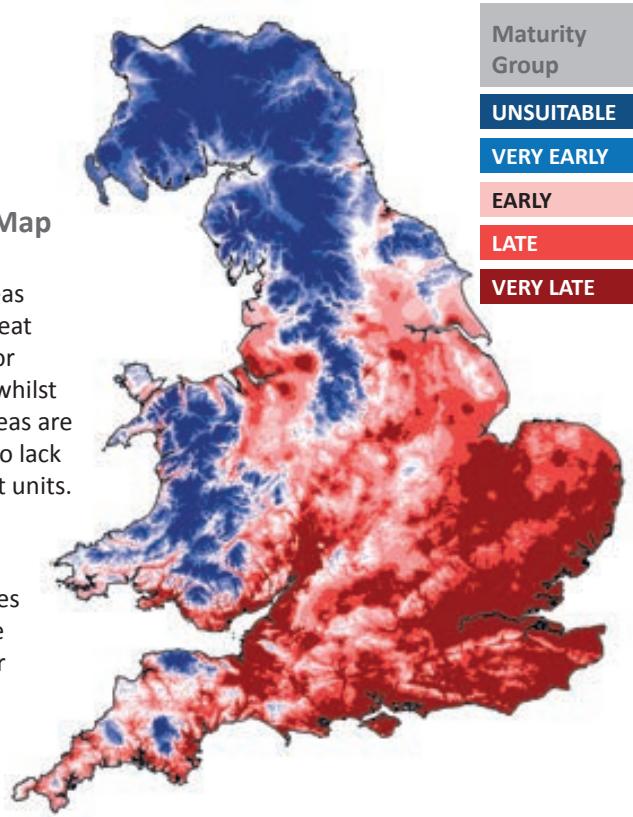
The tool uses the internationally recognised Ontario Heat Unit (OHU) system to show the average heat units available for maize to be grown in a location. Maize varieties differ in the number of heat units required to reach maturity and this affects their suitability to be grown in different locations. As a guide:

Maturity Group	FAO Range
UNSUITABLE	<2500 OHU
VERY EARLY	FAO 140-170
EARLY	FAO 170-200
LATE	FAO 200-220
VERY LATE	FAO 220-250

The LG Heat Map

The dark red areas have plenty of heat units available for growing maize, whilst the dark blue areas are unsuitable due to lack of sufficient heat units.

Marginal areas requiring earlier maturing varieties are shown in the bordering lighter colours.



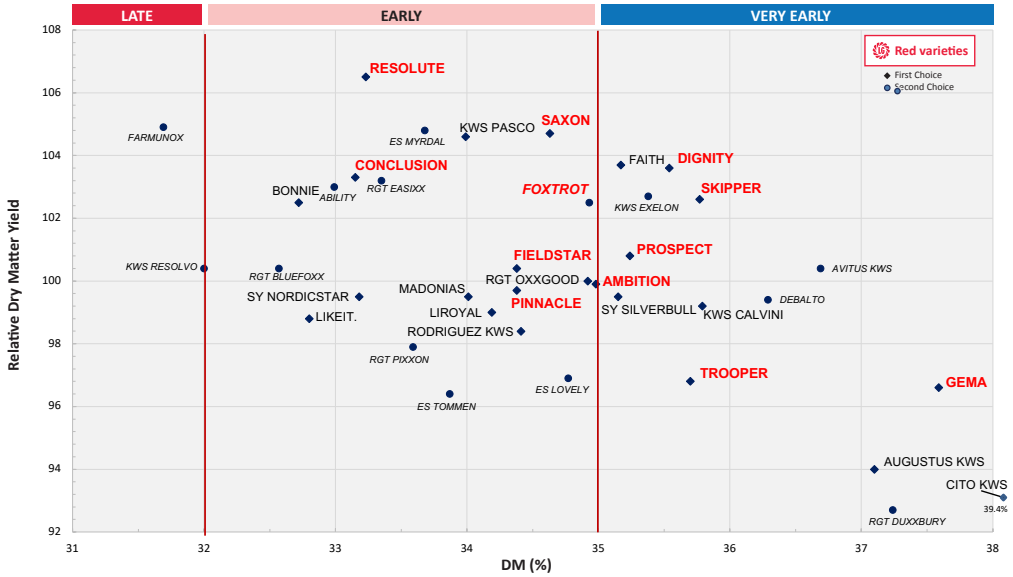
VARIETY DATA IN TABLE AND CHART FORMAT

Tables provide the full set of trials data

		MATURITY				YIELD DATA		AGRONOMIC DATA					
MATURITY GROUP	VARIETY	MATURITY CLASS *	FAO RATING *	DM% (at harvest)	EARLIER/ LATER TO HARVEST (# Days +/- Ambition)	DM YIELD (t/ha)	RELATIVE DM YIELD (%)	EARLY VIGOUR (9=good, 1=poor)	STANDING (at harvest 9=good, 1=poor)	LODGING (%)	LEAF SENESCENCE (at harvest 9=good, 1=poor)	EYESPOT RATING (9=good, 1=poor)	YEAR LISTED
Mean of the year 4 & 5 varieties				*34.8*		*17.9*	*100*	*6.9*	*7.3*	*2.1*	*6.7*	*5.6*	
VERY EARLY	CITO KWS	12	140	39.4	16	16.7	93	6.8	7.3	2.3	5.0	5.5	2018
	GEMA	12	140	37.6	9	17.3	97	6.7	7.1	2.6	5.8	6.0	2021
	AUGUSTUS KWS	11	150	37.1	7	16.8	94	6.9	6.9	3.1	5.3	6.7	2015
	KWS CALVINI	10	160	35.8	3	17.7	99	7.1	7.5	1.6	5.8	6.7	2019
	SKIPPER NEW	10	160	35.8	3	18.3	103	6.9	7.6	1.6	7.3	[3.4]	2023
	TROOPER	10	160	35.7	3	17.3	97	7.0	8.1	0.5	6.4	1.4	2020
	DIGNITY	10	170	35.5	2	18.5	104	7.0	7.6	1.5	6.7	2.8	2022
	PROSPECT	10	170	35.2	1	18.0	101	7.1	7.3	2.3	7.4	7.5	2019
	FAITH NEW	10	170	35.2	1	18.5	104	7.1	7.4	1.9	6.4	[3.5]	2023
	SY SILVERBULL NEW	10	170	35.2	1	17.8	100	6.5	7.2	2.3	6.4	[6.1]	2023
	AMBITION	9	170	35.0	0	17.9	100	6.9	7.8	1.1	7.1	6.4	2012
EARLY	RGT OXXGOOD	9	180	34.9	0	17.9	100	6.7	7.3	2.2	6.3	6.5	2016
	SAXON	8	180	34.6	-1	18.7	105	7.2	6.5	3.9	6.8	3.1	2022
	RODRIGUEZ KWS	8	180	34.4	-2	17.6	98	6.6	8.0	0.6	6.7	4.7	2015
	FIELDSTAR	8	180	34.4	-2	18.0	100	6.8	7.8	1.0	7.1	6.5	2013
	PINNACLE	8	180	34.4	-2	17.8	100	6.8	6.4	4.1	7.4	6.6	2018
	LIROYAL	8	180	34.2	-3	17.7	99	6.7	7.7	1.2	6.6	6.1	2019
	MADONIAS	8	180	34.0	-3	17.8	100	6.7	7.2	2.4	6.2	5.7	2018
	KWS PASCO	8	180	34.0	-3	18.7	105	7.0	7.1	2.7	6.7	7.0	2022
	RESOLUTE	7	190	33.2	-6	19.0	107	7.2	7.6	1.5	7.7	2.4	2020
	SY NORDICSTAR	7	190	33.2	-6	17.8	100	7.0	7.1	2.6	7.4	7.9	2016
	CONCLUSION	7	190	33.2	-6	18.5	103	7.2	7.3	2.3	7.5	4.0	2020
	LIKEIT.	7	190	32.8	-8	17.7	99	6.9	8.1	0.4	6.9	4.7	2018
	BONNIE	7	190	32.7	-8	18.3	103	7.2	7.7	1.4	7.9	6.3	2017

NEW New in 2024 * MC = Limagrain Estimation of Maturity Class and FAO rating # Limagrain estimate of days earlier / later to harvest than Ambition, the BSPB/NIAB early control variety [ ] Limited data

Charts visually show maturity and yield data



Tabular data to aid your variety decision

The tables provide useful independent data on both agronomics and feed quality for maize. Agronomy information is included for yield, early vigour and disease resistance.

Feed quality information includes detail on both starch, energy yield and content. In addition, digestibility of maize is shown by the CWD scores.

Varieties are split into maturity segments

Varieties are divided into groups of similar maturity to enable easy comparison.

The main three groups are:

Very Early Suitable for early harvest or marginal sites

Early For mainstream good sites targeting feed quality and yield

Late For only the best sites and targeting high yield potential

RELATIVE DRY MATTER YIELD AND AGRONOMIC CHARACTERISTICS

BSPB/NIAB Descriptive List for Forage Maize 2024: Less Favourable Sites

FIRST CHOICE VARIETIES - RANKED BY EARLINESS

		MATURITY				YIELD DATA		AGRONOMIC DATA					
MATURITY GROUP	VARIETY	MATURITY CLASS *	FAO RATING *	DM% (at harvest)	EARLIER/ LATER TO HARVEST (# Days +/- Ambition)	DM YIELD (t/ha)	RELATIVE DM YIELD (%)	EARLY VIGOUR (9=good, 1=poor)	STANDING (at harvest 9=good, 1=poor)	LODGING (%)	LEAF SENESCENCE (at harvest 9=good, 1=poor)	EYESPOT RATING (9=good, 1=poor)	YEAR LISTED
Mean of the year 4 & 5 varieties				*34.8*		*17.9*	*100*	*6.9*	*7.3*	*2.1*	*6.7*	*5.6*	
VERY EARLY	CITO KWS	12	140	39.4	16	16.7	93	6.8	7.3	2.3	5.0	5.5	2018
	GEMA	**12**	**140**	**37.6**	**9**	**17.3**	**97**	**6.7**	**7.1**	**2.6**	**5.8**	**6.0**	**2021**
	AUGUSTUS KWS	11	150	37.1	7	16.8	94	6.9	6.9	3.1	5.3	6.7	2015
	KWS CALVINI	10	160	35.8	3	17.7	99	7.1	7.5	1.6	5.8	6.7	2019
	SKIPPER NEW	**10**	**160**	**35.8**	**3**	**18.3**	**103**	**6.9**	**7.6**	**1.6**	**7.3**	**[3.4]**	**2023**
	TROOPER	**10**	**160**	**35.7**	**3**	**17.3**	**97**	**7.0**	**8.1**	**0.5**	**6.4**	**1.4**	**2020**
	DIGNITY	**10**	**170**	**35.5**	**2**	**18.5**	**104**	**7.0**	**7.6**	**1.5**	**6.7**	**2.8**	**2022**
	PROSPECT	**10**	**170**	**35.2**	**1**	**18.0**	**101**	**7.1**	**7.3**	**2.3**	**7.4**	**7.5**	**2019**
	FAITH NEW	10	170	35.2	1	18.5	104	7.1	7.4	1.9	6.4	[3.5]	2023
	SY SILVERBULL NEW	10	170	35.2	1	17.8	100	6.5	7.2	2.3	6.4	[6.1]	2023
	AMBITION	**9**	**170**	**35.0**	**0**	**17.9**	**100**	**6.9**	**7.8**	**1.1**	**7.1**	**6.4**	**2012**
EARLY	RGT OXXGOOD	9	180	34.9	0	17.9	100	6.7	7.3	2.2	6.3	6.5	2016
	SAXON	**8**	**180**	**34.6**	**-1**	**18.7**	**105**	**7.2**	**6.5**	**3.9**	**6.8**	**3.1**	**2022**
	RODRIGUEZ KWS	8	180	34.4	-2	17.6	98	6.6	8.0	0.6	6.7	4.7	2015
	FIELDSTAR	**8**	**180**	**34.4**	**-2**	**18.0**	**100**	**6.8**	**7.8**	**1.0**	**7.1**	**6.5**	**2013**
	PINNACLE	**8**	**180**	**34.4**	**-2**	**17.8**	**100**	**6.8**	**6.4**	**4.1**	**7.4**	**6.6**	**2018**
	LIROYAL	8	180	34.2	-3	17.7	99	6.7	7.7	1.2	6.6	6.1	2019
	MADONIAS	8	180	34.0	-3	17.8	100	6.7	7.2	2.4	6.2	5.7	2018
	KWS PASCO	8	180	34.0	-3	18.7	105	7.0	7.1	2.7	6.7	7.0	2022
	RESOLUTE	**7**	**190**	**33.2**	**-6**	**19.0**	**107**	**7.2**	**7.6**	**1.5**	**7.7**	**2.4**	**2020**
	SY NORDICSTAR	7	190	33.2	-6	17.8	100	7.0	7.1	2.6	7.4	7.9	2016
	CONCLUSION	**7**	**190**	**33.2**	**-6**	**18.5**	**103**	**7.2**	**7.3**	**2.3**	**7.5**	**4.0**	**2020**
	LIKEIT.	7	190	32.8	-8	17.7	99	6.9	8.1	0.4	6.9	4.7	2018
	BONNIE	7	190	32.7	-8	18.3	103	7.2	7.7	1.4	7.9	6.3	2017

NEW New in 2024 * MC = Limagrain Estimation of Maturity Class and FAO rating # Limagrain estimate of days earlier / later to harvest than Ambition, the BSPB/NIAB early control variety [ ] Limited data

Selecting varieties by yield may result in a significantly later harvest. Don't rule out earlier varieties with a lower yield but excellent feeding quality.

Maturity

Choose varieties with an appropriate maturity. The lower the FAO rating, the earlier the variety will mature.

Yield Data

Dry matter yield

Earlier varieties ensure crop maturity, but may have lower yields.

Agronomic Data

Early vigour

Strong, vigorous plants quickly establish roots and leaf canopy.

Standing

Ability to remain upright at harvest.

Lodging

% Plants leaning > 30° at harvest.

Leaf senescence

A higher score means plants remain green and healthy up to harvest. Lower scoring varieties may suffer from diseases like Fusarium.

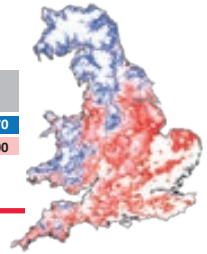
Eyespot rating

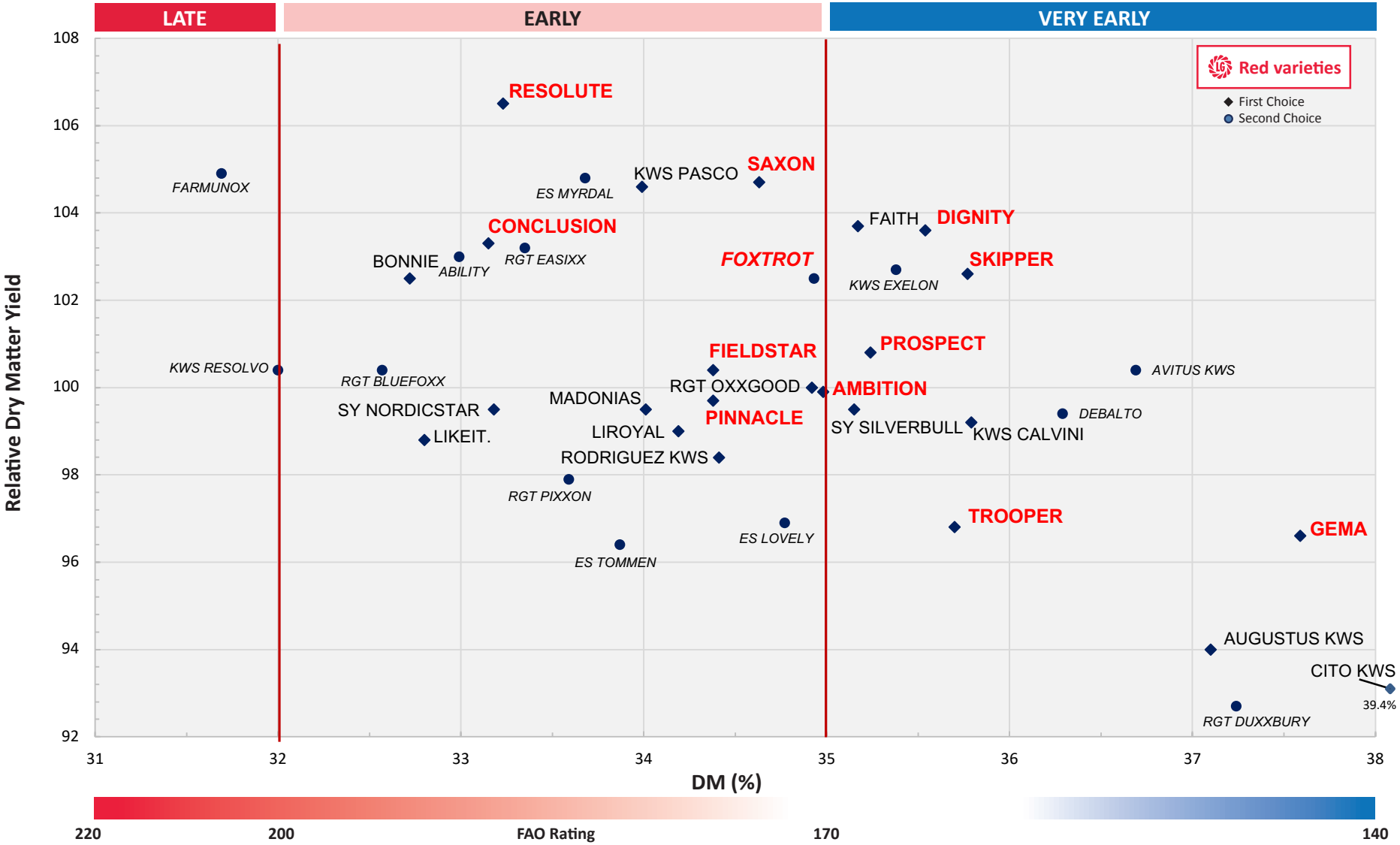
Eyespot rating is derived from NIAB inoculated nursery trials rather than field scores. Fungicide sprays can control the disease for varieties with a low score.

RELATIVE DRY MATTER YIELD v DM%

BSPB/NIAB Descriptive List for Forage Maize 2024: Less Favourable Sites

Maturity Group	FAO Range
VERY EARLY	FAO 140-170
EARLY	FAO 170-200





VARIETIES FOR LESS FAVOURABLE SITES

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RELATIVE STARCH YIELD AND CONTENT

BSPB/NIAB Descriptive List for Forage Maize 2024: Less Favourable Sites

FIRST CHOICE VARIETIES - RANKED BY STARCH YIELD

		MATURITY				STARCH DATA			
MATURITY GROUP	VARIETY	MATURITY CLASS *	FAO RATING *	DM% (at harvest)	EARLIER/ LATER TO HARVEST (# Days +/- Ambition)	STARCH YIELD (t/ha)	RELATIVE STARCH YIELD (%)	STARCH (% at harvest)	YEAR LISTED
Mean of the year 4 & 5 varieties				*34.8*		*6.2*	*100*	*34.9*	
VERY EARLY	CITO KWS	12	140	39.4	16	6.6	106	39.9	2018
	SKIPPER NEW	**10**	**160**	**35.8**	**3**	**6.6**	**106**	**36.1**	**2023**
	GEMA	**12**	**140**	**37.6**	**9**	**6.5**	**103**	**37.4**	**2021**
	KWS CALVINI	10	160	35.8	3	6.4	103	36.3	2019
	FAITH NEW	10	170	35.2	1	6.4	102	34.5	2023
	PROSPECT	**10**	**170**	**35.2**	**1**	**6.4**	**102**	**35.4**	**2019**
	AUGUSTUS KWS	11	150	37.1	7	6.4	102	38.0	2015
	SY SILVERBULL NEW	10	170	35.2	1	6.4	102	35.7	2023
	DIGNITY	**10**	**170**	**35.5**	**2**	**6.3**	**101**	**34.0**	**2022**
	AMBITION	**9**	**170**	**35.0**	**0**	**6.2**	**99**	**34.8**	**2012**
	TROOPER	**10**	**160**	**35.7**	**3**	**6.2**	**99**	**35.6**	**2020**
EARLY	RODRIGUEZ KWS	8	180	34.4	-2	6.5	105	37.2	2015
	KWS PASCO	8	180	34.0	-3	6.5	104	34.8	2022
	RGT OXXGOOD	9	180	34.9	0	6.4	103	35.8	2016
	RESOLUTE	**7**	**190**	**33.2**	**-6**	**6.4**	**102**	**33.6**	**2020**
	PINNACLE	**8**	**180**	**34.4**	**-2**	**6.4**	**102**	**35.8**	**2018**
	LIROYAL	8	180	34.2	-3	6.4	102	36.0	2019
	MADONIAS	8	180	34.0	-3	6.3	102	35.7	2018
	FIELDSTAR	**8**	**180**	**34.4**	**-2**	**6.3**	**101**	**35.1**	**2013**
	SAXON	**8**	**180**	**34.6**	**-1**	**6.3**	**101**	**33.7**	**2022**
	BONNIE	7	190	32.7	-8	6.3	101	34.4	2017
	CONCLUSION	**7**	**190**	**33.2**	**-6**	**6.3**	**100**	**33.9**	**2020**
	SY NORDICSTAR	7	190	33.2	-6	6.0	97	33.9	2016
	LIKEIT	7	190	32.8	-8	5.9	95	33.7	2018

NEW New in 2024 * MC = Limagrain Estimation of Maturity Class and FAO rating # Limagrain estimate of days earlier / later to harvest than Ambition, the BSPB/NIAB early control variety

Starch

Starch yield

Varieties are ranked within maturity groups by total starch yield/Ha.

Starch % at harvest

Indicates cob maturity at harvest.

Starch in livestock rations

Starch is a fundamental component of forage maize, providing 'rumen fermentable energy' fuelling the microbial population in the rumen. A proportion of starch, known as bypass starch, is absorbed directly by the animal as glucose. Maize starch is a 'safer' source of energy than feed ingredients such as cereals, as fermentation rates can be slower, reducing the risk of acidosis. Varieties with a high starch content are especially important in forage rations with <50% maize content. Starch from maize balances the rapidly available energy and higher protein levels found in the grass silage.

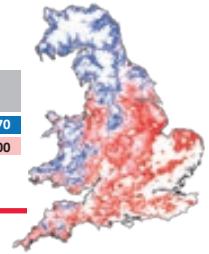
Starch and anaerobic digestion

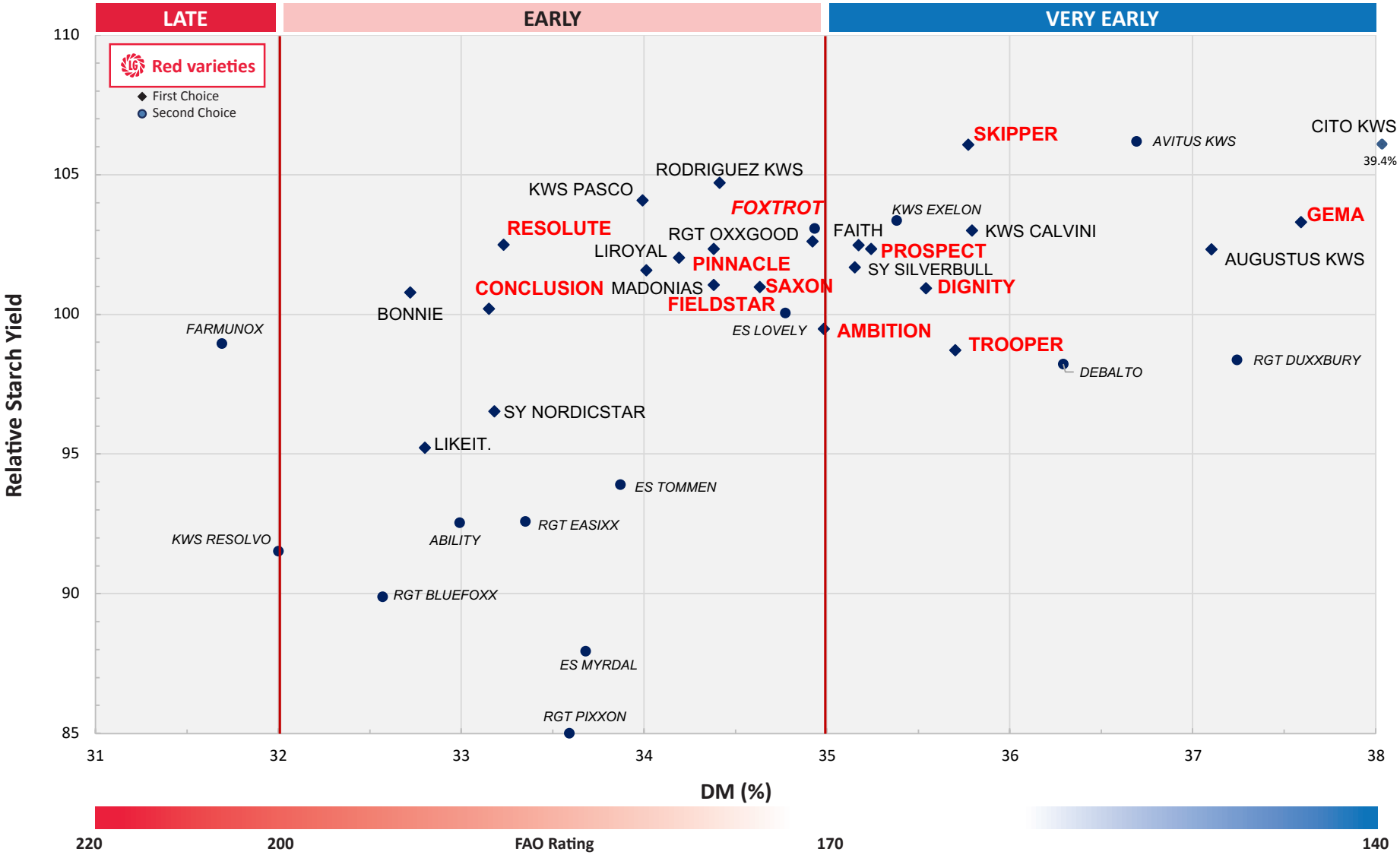
Starch is the major contributor to the total feedstock energy value of maize. Unlike soluble carbohydrates, starch remains stable in the ensiling process, preserving the energy potential of the crop for improved gas production.

RELATIVE STARCH YIELD v DM%

BSPB/NIAB Descriptive List for Forage Maize 2024: Less Favourable Sites

Maturity Group	FAO Range
VERY EARLY	FAO 140-170
EARLY	FAO 170-200





VARIETIES FOR LESS FAVOURABLE SITES

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ME YIELD AND CELL WALL DIGESTIBILITY

BSPB/NIAB Descriptive List for Forage Maize 2024: Less Favourable Sites

FIRST CHOICE VARIETIES - RANKED BY ME YIELD

		MATURITY				ENERGY DATA			DIGESTIBILITY	
MATURITY GROUP	VARIETY	MATURITY CLASS *	FAO RATING *	DM% (At harvest)	EARLIER/ LATER TO HARVEST (# Days +/- Ambition)	ME YIELD (MJ/ha at harvest)	RELATIVE ME YIELD (%)	ME (MJ/kg DM of fresh plant at harvest)	CELL WALL DIGESTIBILITY **	YEAR LISTED
Mean of the year 4 & 5 varieties				*34.8*		*210,187*	*100*	*11.8*	*9.0*	
VERY EARLY	FAITH NEW	10	170	35.2	1	217,357	103	11.7	9.0	2023
	DIGNITY	**10**	**170**	**35.5**	**2**	**217,067**	**103**	**11.7**	**9.4**	**2022**
	SKIPPER NEW	**10**	**160**	**35.8**	**3**	**216,899**	**103**	**11.8**	**9.2**	**2023**
	PROSPECT	**10**	**170**	**35.2**	**1**	**214,114**	**102**	**11.9**	**9.8**	**2019**
	SY SILVERBULL NEW	10	170	35.2	1	213,947	102	12.0	11.4	2023
	KWS CALVINI	10	160	35.8	3	209,888	100	11.8	9.1	2019
	AMBITION	**9**	**170**	**35.0**	**0**	**208,381**	**99**	**11.7**	**8.4**	**2012**
	TROOPER	**10**	**160**	**35.7**	**3**	**204,780**	**97**	**11.8**	**9.3**	**2020**
	GEMA	**12**	**140**	**37.6**	**9**	**202,463**	**96**	**11.7**	**8.1**	**2021**
	CITO KWS	12	140	39.4	16	201,798	96	12.1	10.0	2018
	AUGUSTUS KWS	11	150	37.1	7	200,122	95	11.9	9.2	2015
EARLY	**RESOLUTE**	**7**	**190**	**33.2**	**-6**	**223,187**	**106**	**11.7**	**8.9**	**2020**
	SAXON	**8**	**180**	**34.6**	**-1**	**220,952**	**105**	**11.8**	**9.7**	**2022**
	KWS PASCO	8	180	34.0	-3	220,037	105	11.8	9.0	2022
	CONCLUSION	**7**	**190**	**33.2**	**-6**	**219,674**	**105**	**11.9**	**10.6**	**2020**
	BONNIE	7	190	32.7	-8	216,314	103	11.8	9.6	2017
	RGT OXXGOOD	9	180	34.9	0	211,670	101	11.9	9.5	2016
	FIELDSTAR	**8**	**180**	**34.4**	**-2**	**211,146**	**100**	**11.8**	**8.8**	**2013**
	PINNACLE	**8**	**180**	**34.4**	**-2**	**210,276**	**100**	**11.8**	**9.0**	**2018**
	LIROYAL	8	180	34.2	-3	210,157	100	11.9	9.6	2019
	MADONIAS	8	180	34.0	-3	208,631	99	11.7	8.4	2018
	RODRIGUEZ KWS	8	180	34.4	-2	208,130	99	11.8	9.0	2015
	SY NORDICSTAR	7	190	33.2	-6	207,518	99	11.7	9.3	2016
	LIKEIT	7	190	32.8	-8	205,781	98	11.7	8.4	2018

NEW New in 2024 ** Cell Wall Digestibility (%) minus 50 * MC = Limagrain Estimation of Maturity Class and FAO rating # Limagrain estimate of days earlier / later to harvest than Ambition, the BSPB/NIAB early control variety

Varieties high in energy density (MJ/kg) usually display both a high starch and cell wall digestible content. In livestock rations selecting high ME content varieties will improve dry matter intakes and animal performance at feeding. Used as an AD feedstock, efficiency of gas output is increased.

Energy Data

ME yield

Indicates total potential energy available. Varieties are ranked within maturity groups by ME yield.

ME (MJ/kg)

Feeding performance and gas output is improved using varieties with higher energy density. ME content is directly influenced by the starch content and fibre digestibility (CWD) of the plant.

Digestibility Data

Cell wall digestibility (CWD)

CWD measures the digestibility of fibre from the non starch part (leaves and stem) of the maize plant. CWD values have been converted from percentage, to a 1-10 range, each unit representing 1% increase.

CWD in livestock rations

Improved CWD is beneficial to feed intake with each 1% increase in CWD increasing dry matter intake by 0.17kg per day. This can result in increased milk yield by 0.25kg per day (Oba and Allen, 1999).

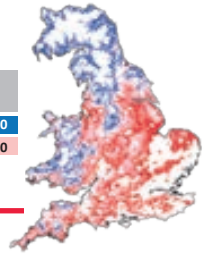
CWD and anaerobic digestion

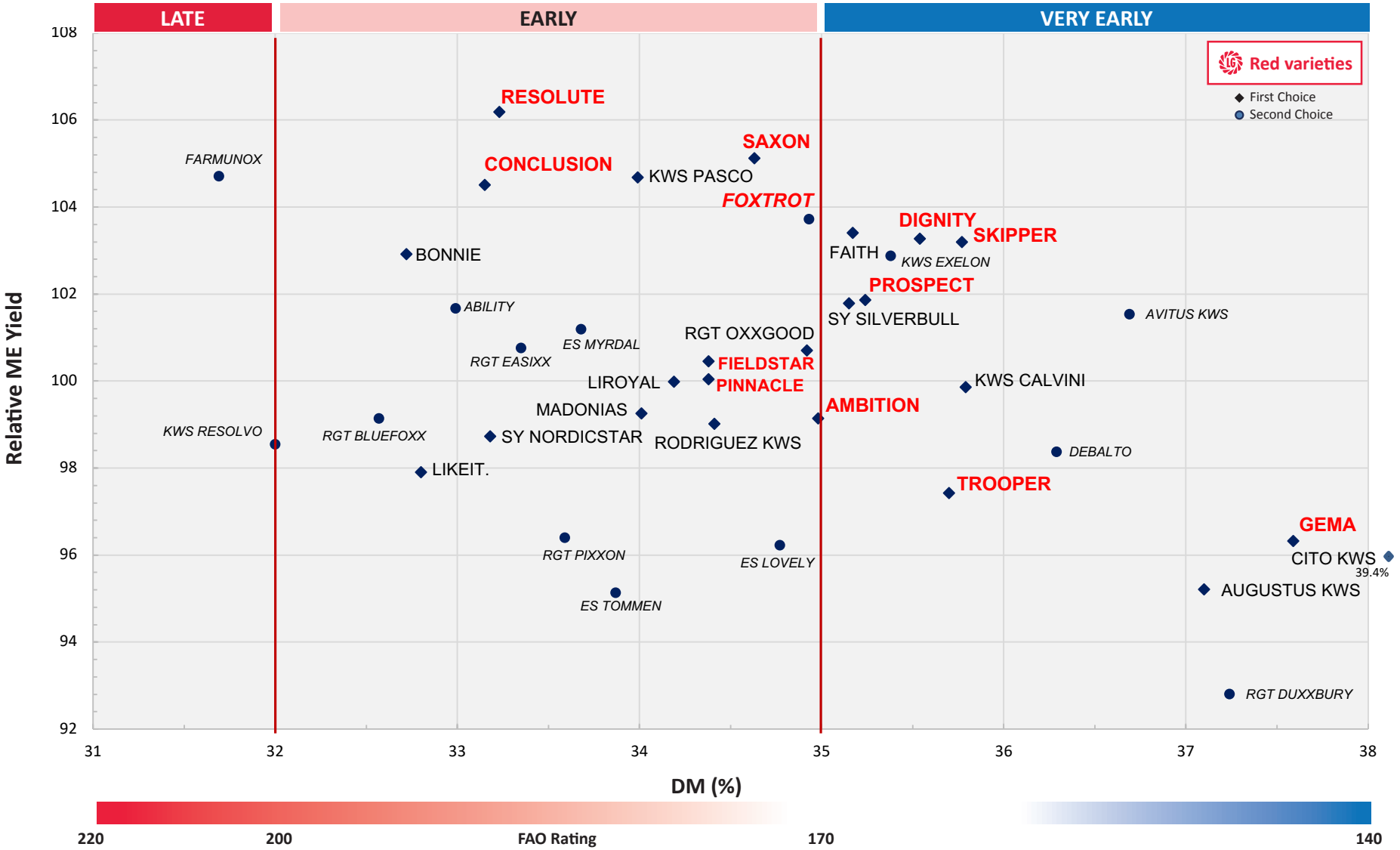
Improved digestibility of fibre increases the energy available for gas production, improving efficiency and reducing digestate output.

RELATIVE ME YIELD v DM%

BSPB/NIAB Descriptive List for Forage Maize 2024: Less Favourable Sites

Maturity Group	FAO Range
VERY EARLY	FAO 140-170
EARLY	FAO 170-200





VARIETIES FOR LESS FAVOURABLE SITES

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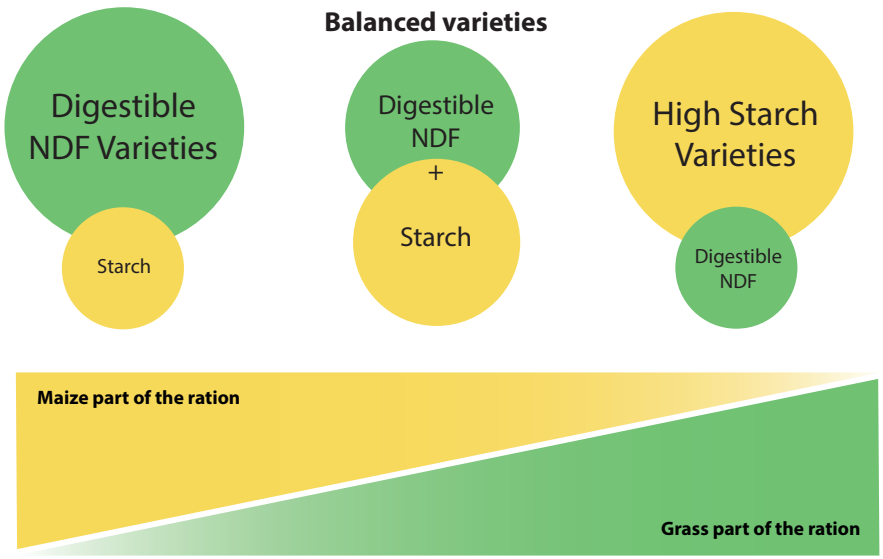
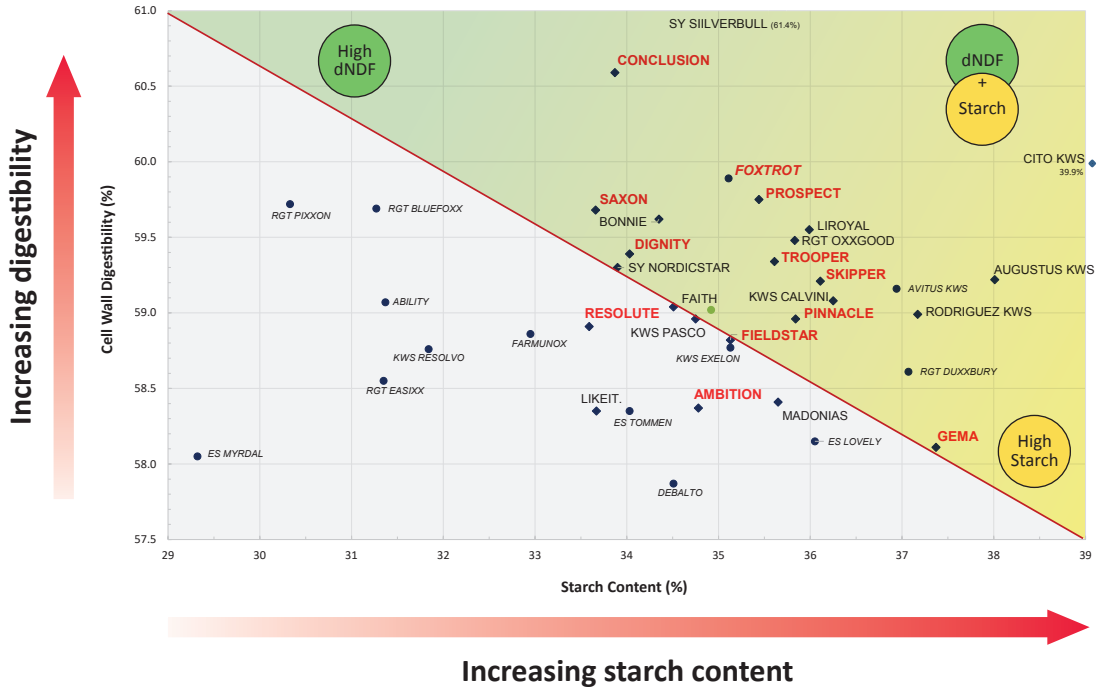
FEEDING QUALITY EXPLAINED

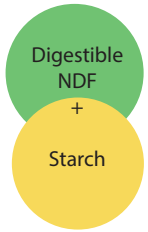
Where to use starch or digestible fibre type varieties in the ration



Varieties high in both starch and digestible fibre perform best



Balanced varieties

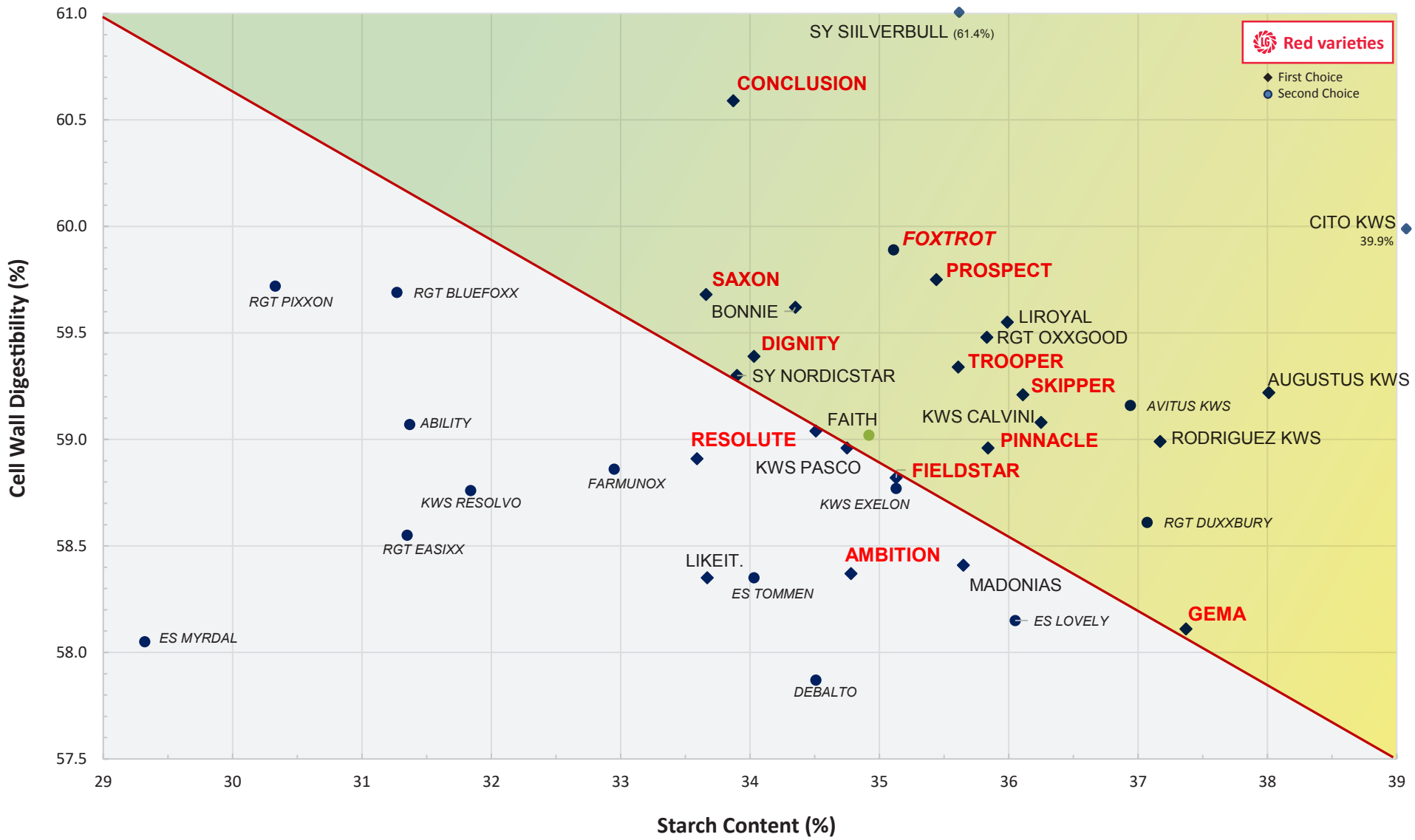


Balanced varieties with improved digestibility and a high starch content will maximize energy production:

- Higher energy content
- A more productive and balanced feed
- Improved dry matter intake
- Better feed efficiency
- Better for animal health
- Improved gas yield for AD

FEEDING QUALITY: CELL WALL DIGESTIBILITY v STARCH CONTENT

BSPB/NIAB Descriptive List for Forage Maize 2023: Less Favourable Sites



VARIETIES FOR LESS FAVOURABLE SITES

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RELATIVE DRY MATTER YIELD AND AGRONOMIC CHARACTERISTICS

BSPB/NIAB Descriptive List for Forage Maize 2024: Favourable Sites

VARIETIES FOR FAVOURABLE SITES

FIRST CHOICE VARIETIES – RANKED BY EARLINESS

		MATURITY				YIELD DATA		AGRONOMIC DATA					
MATURITY GROUP	VARIETY	MATURITY CLASS *	FAO RATING *	DM% (at harvest)	EARLIER/ LATER TO HARVEST (# Days +/- Ambition)	DM YIELD (t/ha)	RELATIVE DM YIELD (%)	EARLY VIGOUR (9=good, 1=poor)	STANDING (at harvest 9=good, 1=poor)	LODGING (%)	LEAF SENESCENCE (at harvest 9=good, 1=poor)	EYESPOT RATING (9=good, 1=poor)	YEAR LISTED
Mean of the 4 & 5 year varieties				*34.1*	*35.1*	*18.2*	*100*	*7.0*	*7.6*	*1.6*	*6.9*	*5.8*	
VERY EARLY	CITO KWS	12	140	37.6	9	16.8	93	7.0	7.7	1.4	5.9	5.5	2018
	GEMA	**11**	**140**	**36.8**	**6**	**17.7**	**97**	**6.7**	**7.4**	**2.1**	**6.3**	**6.0**	**2021**
	AUGUSTUS KWS	11	150	36.3	4	17.1	94	6.9	7.4	1.9	6.1	6.7	2015
	PROSPECT	**10**	**170**	**35.9**	**3**	**18.5**	**101**	**7.2**	**7.7**	**1.2**	**7.3**	**7.5**	**2019**
	SKIPPER NEW	**10**	**160**	**35.9**	**3**	**18.8**	**103**	**7.2**	**7.8**	**1.0**	**7.3**	**[3.4]**	**2023**
	AVITUS KWS	10	160	35.7	2	18.1	100	7.0	6.4	4.2	6.1	5.8	2018
	FAITH NEW	10	170	35.4	1	19.0	104	7.3	7.8	1.2	6.6	[3.5]	2023
	TROOPER	**10**	**160**	**35.4**	**1**	**17.8**	**98**	**7.1**	**8.1**	**0.4**	**7.0**	**1.4**	**2020**
	FOXTROT NEW	**10**	**170**	**35.3**	**1**	**18.7**	**103**	**7.2**	**6.7**	**3.6**	**7.3**	**[2.0]**	**2023**
	DIGNITY	**10**	**170**	**35.3**	**1**	**18.9**	**104**	**7.1**	**7.4**	**1.9**	**6.9**	**2.8**	**2022**
	SY SILVERBULL NEW	10	170	35.1	0	17.8	98	6.6	7.3	2.2	6.7	[6.1]	2023
	KWS CALVINI	10	160	35.1	0	18.1	99	7.2	7.7	1.3	6.2	6.7	2019
EARLY	**PINNACLE**	**9**	**180**	**35.0**	**-1**	**18.0**	**99**	**7.1**	**7.0**	**2.9**	**7.3**	**6.6**	**2018**
	SAXON	**9**	**180**	**34.8**	**-1**	**19.1**	**105**	**7.6**	**7.1**	**2.7**	**6.9**	**3.1**	**2022**
	KWS EXELON	9	170	34.6	-2	18.5	102	7.1	7.0	2.8	6.9	7.7	2021
	FIELDSTAR	**8**	**180**	**34.4**	**-2**	**18.3**	**101**	**7.1**	**8.0**	**0.6**	**7.2**	**6.5**	**2013**
	RODRIGUEZ KWS	8	180	33.9	-4	17.9	98	6.6	8.2	0.3	7.2	4.7	2015
	MADONIAS	8	180	33.7	-5	17.8	98	6.7	7.6	1.5	6.4	5.7	2018
	KWS PASCO	8	180	33.5	-6	18.7	103	7.1	7.6	1.6	7.0	7.0	2022
	CONCLUSION	**8**	**190**	**33.2**	**-7**	**18.8**	**103**	**7.4**	**7.4**	**1.9**	**7.3**	**4.0**	**2020**
	ABILITY	8	190	33.2	-7	18.7	103	7.2	8.0	0.7	7.4	5.6	2020
	RESOLUTE	**8**	**190**	**33.1**	**-7**	**18.9**	**104**	**7.2**	**7.7**	**1.4**	**7.5**	**2.4**	**2020**
	BONNIE	7	190	33.0	-8	18.6	102	7.4	7.7	1.2	7.7	6.3	2017
	KWS ANASTASIO	7	190	32.9	-8	19.0	104	7.3	7.6	1.4	7.5	6.6	2022
LATE	EMELEEN NEW	6	200	31.9	-11	19.3	106	7.1	7.6	1.6	7.3	7.2	2023
	FARMUNOX	6	200	31.8	-12	18.7	103	6.7	6.7	3.4	7.8	6.7	2020
	CROSBEY	5	210	30.6	-16	18.7	103	6.7	8.0	0.6	7.6	5.9	2023
	SMOOTHI CS	4	220	29.9	-18	18.7	103	6.6	7.2	2.4	7.4	7.1	2019
	ES PALLADIUM NEW	3	230	29.0	-21	19.4	107	7.1	7.6	1.6	7.4	5.1	2023

NEW New in 2024 * MC = Limagrain Estimation of Maturity Class and FAO rating # Limagrain estimate of days earlier / later to harvest than Ambition, the BSPB/NIAB control variety [ ] Limited data

Maturity

Choose varieties with an appropriate maturity. The lower the FAO rating, the earlier the variety will mature.

Yield Data

Dry matter yield

Earlier varieties ensure crop maturity, but may have lower yields.

Agronomic Data

Early vigour

Strong, vigorous plants quickly establish roots and leaf canopy.

Standing

Ability to remain upright at harvest.

Lodging

% Plants leaning > 30° at harvest.

Leaf senescence

A higher score means plants remain green and healthy up to harvest. Lower scoring varieties may suffer from diseases like Fusarium.

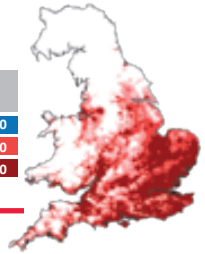
Eyespot rating

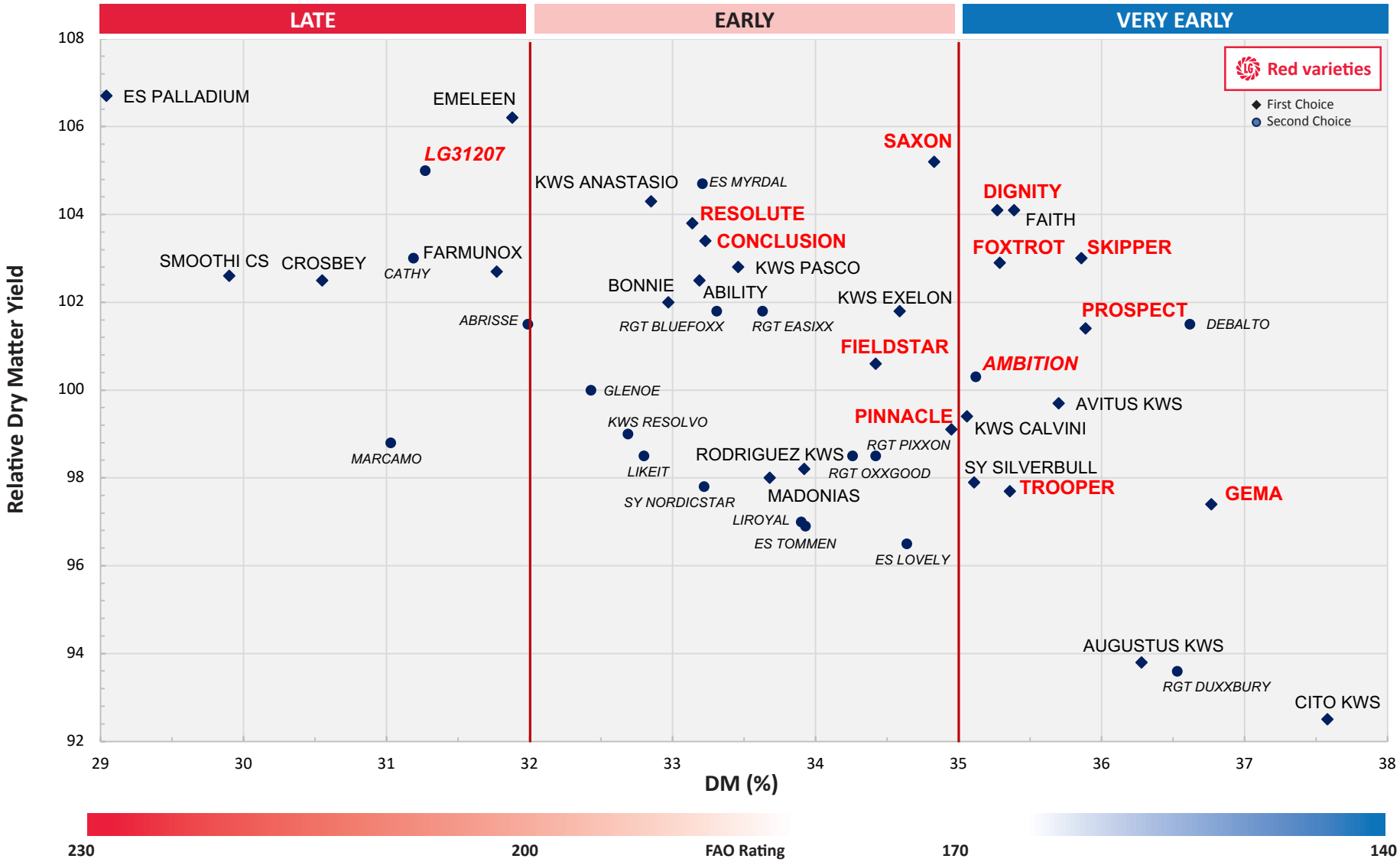
Eyespot rating is derived from NIAB inoculated nursery trials rather than field scores. Fungicide sprays can control the disease for varieties with a low score.

RELATIVE DRY MATTER YIELD v DM%

BSPB/NIAB Descriptive List for Forage Maize 2024: Favourable Sites

Maturity Group	FAO Range
EARLY	FAO 170-200
LATE	FAO 200-220
VERY LATE	FAO 220-250





VARIETIES FOR FAVOURABLE SITES

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RELATIVE STARCH YIELD AND CONTENT

BSPB/NIAB Descriptive List for Forage Maize 2024: Favourable Sites

FIRST CHOICE VARIETIES – RANKED BY STARCH YIELD

		MATURITY				STARCH DATA			
MATURITY GROUP	VARIETY	MATURITY CLASS *	FAO RATING *	DM% (At harvest)	EARLIER/ LATER TO HARVEST (# Days +/- Ambition)	STARCH YIELD (t/ha)	RELATIVE STARCH YIELD (%)	STARCH (% at harvest)	YEAR LISTED
Mean of the 4 & 5 year varieties				*34.1*	*35.1*	*6.2*	*100*	*33.8*	
VERY EARLY	**SKIPPER** NEW	**10**	**160**	**35.9**	**3**	**6.7**	**110**	**36.0**	**2023**
	FOXTROT NEW	**10**	**170**	**35.3**	**1**	**6.5**	**106**	**34.9**	**2023**
	PROSPECT	**10**	**170**	**35.9**	**3**	**6.5**	**106**	**35.4**	**2019**
	AVITUS KWS	10	160	35.7	2	6.5	106	36.0	2018
	GEMA	**11**	**140**	**36.8**	**6**	**6.5**	**106**	**36.8**	**2021**
	AUGUSTUS KWS	11	150	36.3	4	6.5	106	38.1	2015
	FAITH NEW	10	170	35.4	1	6.5	105	34.1	2023
	DIGNITY	**10**	**170**	**35.3**	**1**	**6.4**	**104**	**33.6**	**2022**
	KWS CALVINI	10	160	35.1	0	6.3	103	35.0	2019
	CITO KWS	12	140	37.6	9	6.3	103	37.6	2018
	TROOPER	**10**	**160**	**35.4**	**1**	**6.3**	**102**	**35.4**	**2020**
	SY SILVERBULL NEW	10	170	35.1	0	6.3	102	35.3	2023
EARLY	**PINNACLE**	**9**	**180**	**35.0**	**-1**	**6.5**	**105**	**35.8**	**2018**
	KWS PASCO	8	180	33.5	-6	6.4	105	34.4	2022
	RODRIGUEZ KWS	8	180	33.9	-4	6.4	104	36.0	2015
	KWS EXELON	9	170	34.6	-2	6.4	104	34.6	2021
	CONCLUSION	**8**	**190**	**33.2**	**-7**	**6.4**	**104**	**33.9**	**2020**
	MADONIAS	8	180	33.7	-5	6.3	103	35.5	2018
	FIELDSTAR	**8**	**180**	**34.4**	**-2**	**6.3**	**103**	**34.5**	**2013**
	SAXON	**9**	**180**	**34.8**	**-1**	**6.3**	**102**	**32.9**	**2022**
	BONNIE	7	190	33.0	-8	6.3	102	33.9	2017
	RESOLUTE	**8**	**190**	**33.1**	**-7**	**6.3**	**102**	**33.3**	**2020**
	KWS ANASTASIO	7	190	32.9	-8	6.1	99	32.2	2022
	ABILITY	8	190	33.2	-7	5.9	96	31.6	2020
LATE	FARMUNOX	6	200	31.8	-12	6.1	100	32.8	2020
	CROSBEY	5	210	30.6	-16	5.9	95	31.5	2023
	EMELEEN NEW	6	200	31.9	-11	5.7	92	29.5	2023
	SMOOTHI CS	4	220	29.9	-18	5.6	90	29.7	2019
	ES PALLADIUM NEW	3	230	29.0	-21	5.2	84	26.7	2023

NEW New in 2024 * MC = Limagrain Estimation of Maturity Class and FAO rating # Limagrain estimate of days earlier / later to harvest than Ambition, the BSPB/NIAB control variety

Starch

Starch yield

Varieties are ranked within maturity groups by total starch yield/Ha.

Starch % at harvest

Indicates cob maturity at harvest.

Starch in livestock rations

Starch is a fundamental component of forage maize, providing 'rumen fermentable energy' fueling the microbial population in the rumen. A proportion of starch, known as bypass starch, is absorbed directly by the animal as glucose. Maize starch is a 'safer' source of energy than feed ingredients such as cereals, as fermentation rates can be slower, reducing the risk of acidosis. Varieties with a high starch content are especially important in forage rations with <50% maize content. Starch from maize balances the rapidly available energy and higher protein levels found in the grass silage.

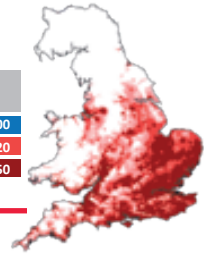
Starch and anaerobic digestion

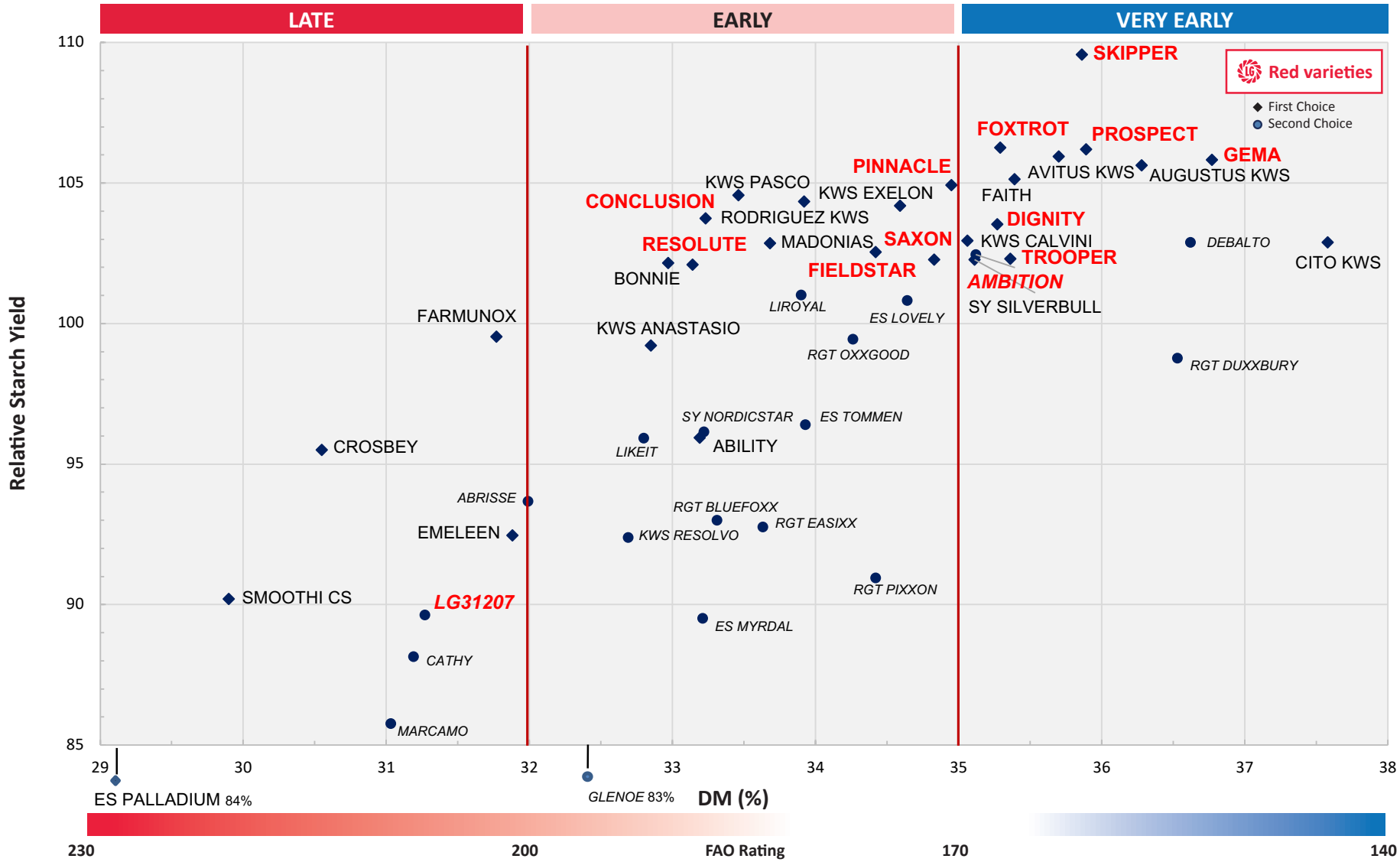
Starch is the major contributor to the total feedstock energy value of maize. Unlike soluble carbohydrates, starch remains stable in the ensiling process, preserving the energy potential of the crop for improved gas production.

RELATIVE STARCH YIELD v DM%

BSPB/NIAB Descriptive List for Forage Maize 2024: Favourable Sites

Maturity Group	FAO Range
EARLY	FAO 170-200
LATE	FAO 200-220
VERY LATE	FAO 220-250





VARIETIES FOR FAVOURABLE SITES

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ME YIELD AND CELL WALL DIGESTIBILITY

BSPB/NIAB Descriptive List for Forage Maize 2024: Favourable Sites

FIRST CHOICE VARIETIES - RANKED BY ME YIELD

		MATURITY				ENERGY DATA			DIGESTIBILITY	
MATURITY GROUP	VARIETY	MATURITY CLASS *	FAO RATING *	DM% (At harvest)	EARLIER/ LATER TO HARVEST (# Days +/- Ambition)	ME YIELD (MJ/ha at harvest)	RELATIVE ME YIELD (%)	ME (MJ/kg DM of fresh plant at harvest)	CELL WALL DIGESTIBILITY **	YEAR LISTED
Mean of the 4 & 5 year varieties				*34.1*	*35.1*	*213.241*	*100*	*11.7*	*9.0*	
VERY EARLY	DIGNITY	10	170	35.3	1	222,526	104	11.8	9.5	2022
	FOXTROT NEW	10	170	35.3	1	222,363	104	11.9	9.4	2023
	FAITH NEW	10	170	35.4	1	222,208	104	11.7	8.9	2023
	SKIPPER NEW	10	160	35.9	3	221,175	104	11.8	8.8	2023
	PROSPECT	10	170	35.9	3	220,016	103	11.9	10.1	2019
	SY SILVERBULL NEW	10	170	35.1	0	215,266	101	12.1	11.7	2023
	AVITUS KWS	10	160	35.7	2	215,094	101	11.9	9.2	2018
	KWS CALVINI	10	160	35.1	0	213,434	100	11.8	9.2	2019
	TROOPER	10	160	35.4	1	210,124	99	11.8	9.3	2020
	GEMA	11	140	36.8	6	207,490	97	11.7	8.0	2021
	AUGUSTUS KWS	11	150	36.3	4	205,233	96	12.0	9.8	2015
	CITO KWS	12	140	37.6	9	202,044	95	12.0	9.7	2018
EARLY	SAXON	9	180	34.8	-1	224,682	105	11.8	9.2	2022
	CONCLUSION	8	190	33.2	-7	223,350	105	11.9	10.3	2020
	KWS PASCO	8	180	33.5	-6	220,978	104	11.8	9.1	2022
	RESOLUTE	8	190	33.1	-7	220,900	104	11.7	8.9	2020
	KWS ANASTASIO	7	190	32.9	-8	220,775	104	11.6	8.6	2022
	BONNIE	7	190	33.0	-8	219,113	103	11.8	9.8	2017
	KWS EXELON	9	170	34.6	-2	218,721	103	11.8	8.8	2021
	ABILITY	8	190	33.2	-7	217,762	102	11.7	9.5	2020
	FIELDSTAR	8	180	34.4	-2	215,245	101	11.8	9.0	2013
	PINNACLE	9	180	35.0	-1	213,205	100	11.8	9.0	2018
	RODRIGUEZ KWS	8	180	33.9	-4	211,587	99	11.9	9.4	2015
	MADONIAS	8	180	33.7	-5	210,768	99	11.8	8.9	2018
LATE	ES PALLADIUM NEW	3	230	29.0	-21	223,176	105	11.5	9.4	2023
	EMELEEN NEW	6	200	31.9	-11	221,697	104	11.5	8.5	2023
	FARMUNOX	6	200	31.8	-12	219,794	103	11.8	9.0	2020
	CROSBEY	5	210	30.6	-16	213,170	100	11.4	7.4	2023
	SMOOTHI CS	4	220	29.9	-18	213,081	100	11.4	8.4	2019

NEW New in 2024 ** Cell Wall Digestibility (%) minus 50 * MC = Limagrain Estimation of Maturity Class and FAO rating # Limagrain estimate of days earlier / later to harvest than Ambition, the BSPB/NIAB control variety

Energy Data

ME yield

Indicates total potential energy available. Varieties are ranked within maturity groups by ME yield.

ME (MJ/kg)

Feeding performance and gas output is improved using varieties with higher energy density. ME content is directly influenced by the starch content and fibre digestibility (CWD) of the plant.

Digestibility Data

Cell wall digestibility (CWD)

CWD measures the digestibility of fibre from the non starch part (leaves and stem) of the maize plant. CWD values have been converted from percentage, to a 1-10 range, each unit representing 1% increase.

CWD in livestock rations

Improved CWD is beneficial to feed intake with each 1% increase in CWD increasing dry matter intake by 0.17kg per day. This can result in increased milk yield by 0.25kg per day (Oba and Allen, 1999).

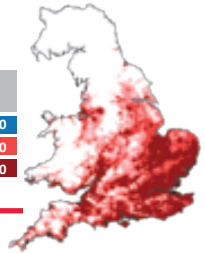
CWD and anaerobic digestion

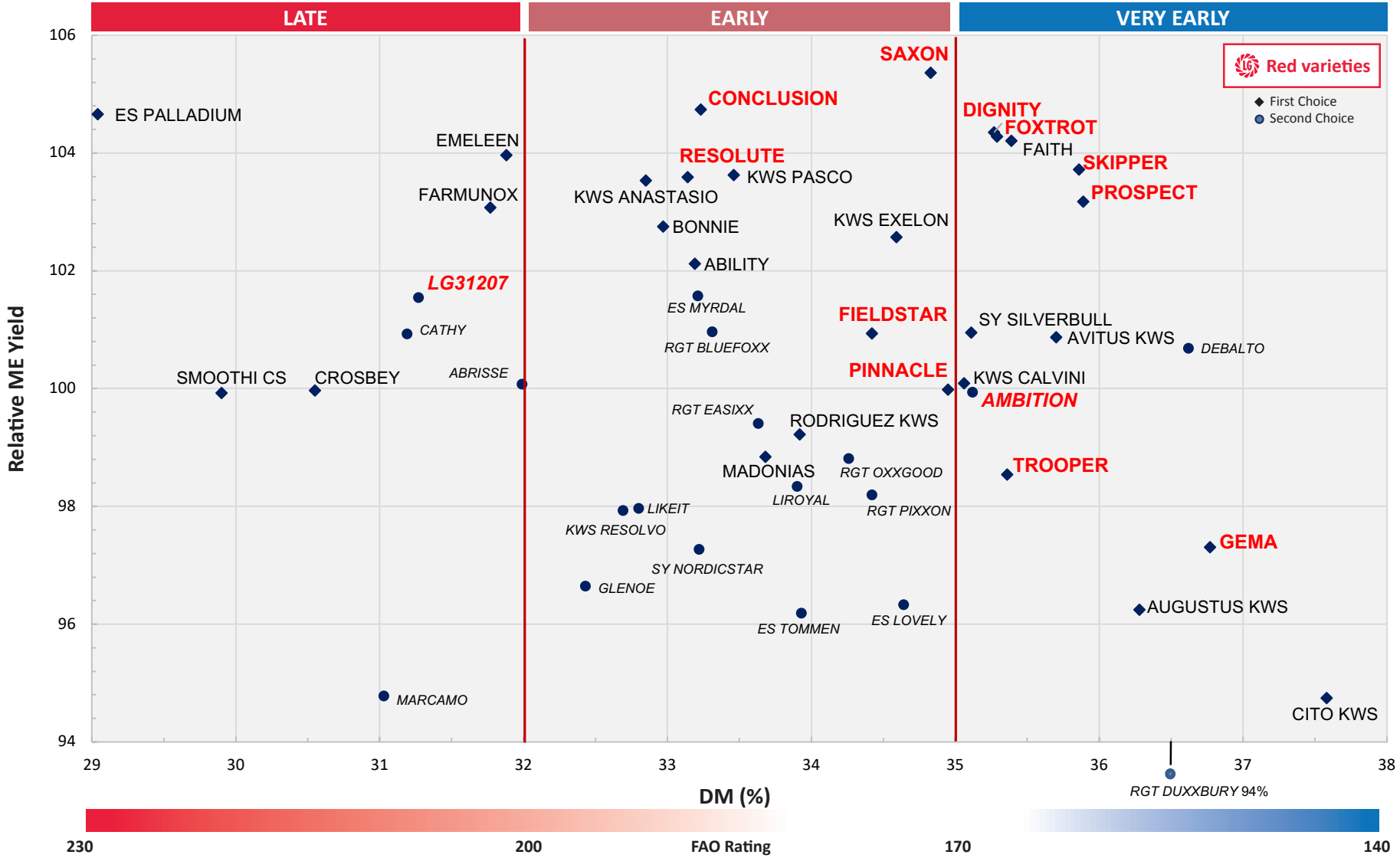
Improved digestibility of fibre increases the energy available for gas production, improving efficiency and reducing digestate output.

RELATIVE ME YIELD v DM%

BSPB/NIAB Descriptive List for Forage Maize 2024: Favourable Sites

Maturity Group	FAO Range
EARLY	FAO 170-200
LATE	FAO 200-220
VERY LATE	FAO 220-250





VARIETIES FOR FAVOURABLE SITES

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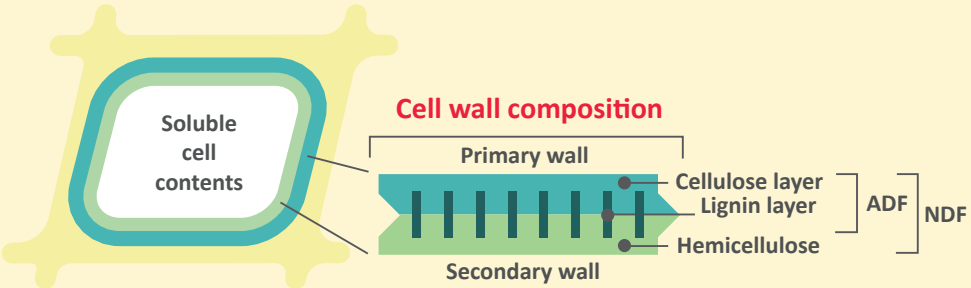
FEEDING QUALITY

The impact of fibre digestibility

Varieties from LG with improved digestibility and high starch yields can improve ration performance and are LGAN accredited.



Cell walls impact directly on the digestibility of maize

Cell wall fibres are composed of cellulose, hemicellulose and lignin and account for around 40% of total plant dry matter found in the stem, leaves and husk. Lignin is present in relatively small quantities, but gives structural strength to the plant. Lignin is indigestible by the animal and is produced in greater quantities as the plant develops and matures.

Both cellulose and hemicellulose make up the majority of cell wall content and are potentially completely digestible by animals.

Digestible fibre (dNDF)- the key to improved performance

Dairy cows need to maximise dry matter intake (DMI) if they are to absorb sufficient energy to maintain high levels of milk production.

AD plants can improve efficiency of gas production by increasing the highly degradable fibre content of maize silage to help speed passage through the digester.

To maximise feed quality, select LGAN varieties with both high starch content and cell wall digestibility. More information on the difference in CWD between varieties can be found on pages 10 and 18.

Is cell wall digestibility the same as fibre digestibility?

The digestibility of fibre (dNDF) in maize is measured by cell wall digestibility (CWD). CWD measures the extent to which animals can digest maize plant fibre. As lignin content increases, cell wall digestibility declines.

The higher the cell wall digestibility, the better the potential feed value of the plant.

Cell wall digestibility and diet formulation

The greater the proportion of maize silage in the diet, the more important the cell wall digestibility becomes.

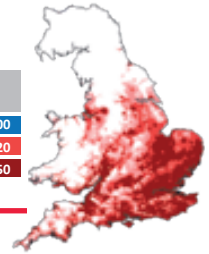
The lower the digestibility of cell wall, the slower the rate of forage digestion. Varieties with poor cell wall digestibility impact feed intakes with slower digestion and reduced production.

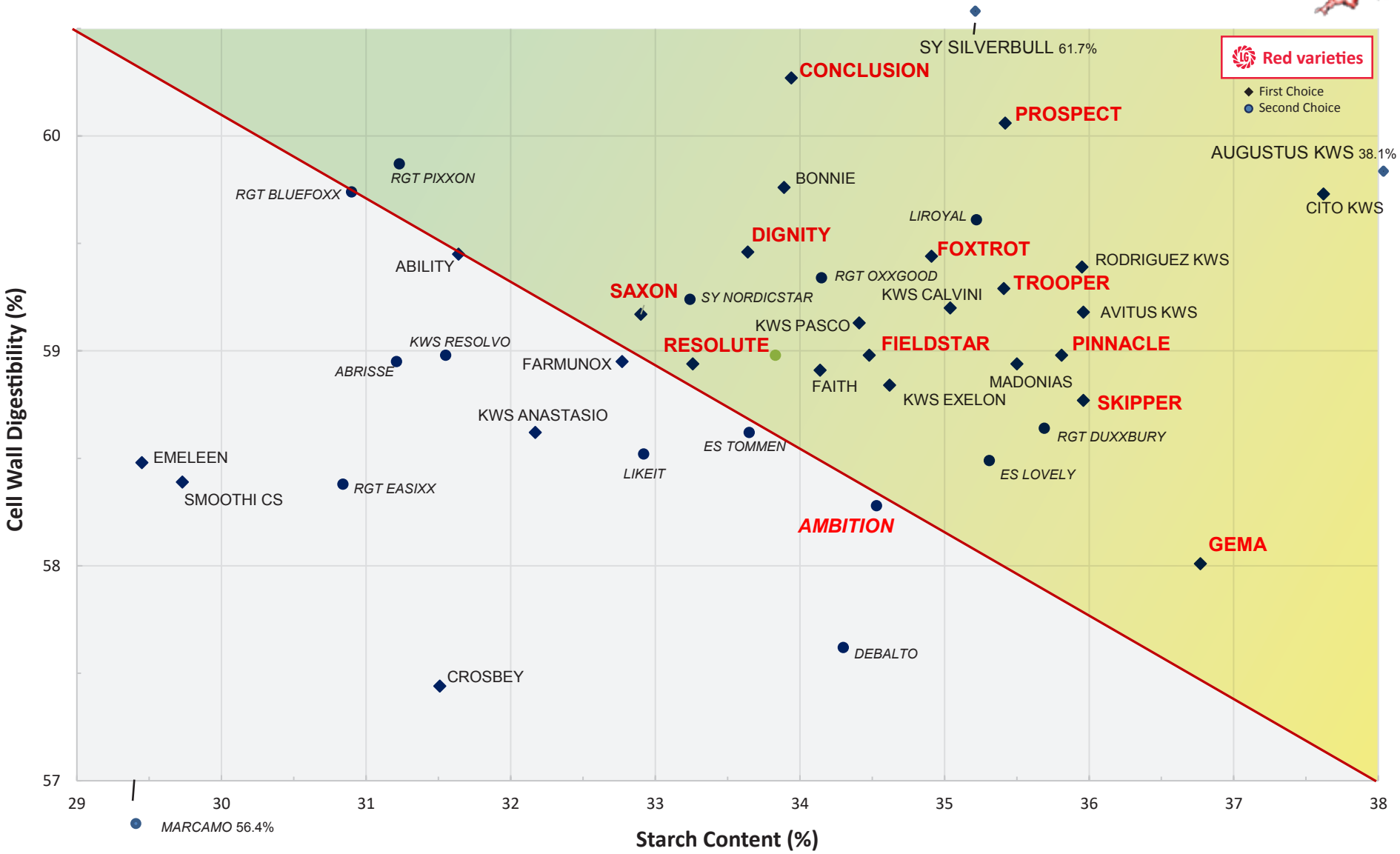
A maize variety with improved cell wall digestibility can be formulated into the diet at a higher level than one with a lower cell wall digestibility, saving money on purchased concentrates.

STARCH CONTENT v CELL WALL DIGESTIBILITY

BSPB/NIAB Descriptive List for Forage Maize 2023: Favourable Sites

Maturity Group	FAO Range
EARLY	FAO 170-200
LATE	FAO 200-220
VERY LATE	FAO 220-250





VARIETIES FOR FAVOURABLE SITES

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VARIETIES FOR VERY FAVOURABLE SITES

BSPB/NIAB Descriptive List for Forage Maize 2024: Very Favourable Sites

RANKED BY ME YIELD

		MATURITY				YIELD DATA		AGRONOMIC DATA					STARCH DATA			ENERGY DATA			DIGESTIBILITY	
MATURITY GROUP	VARIETY	MATURITY CLASS *	FAO RATING *	DM% (At harvest)	EARLIER/ LATER TO HARVEST (# Days +/- SMOOTHI CS)	DM YIELD (t/ha)	REL DM YIELD (%)	EARLY VIGOUR (9=good, 1=poor)	STANDING (At harvest 9=good, 1=poor)	LODGING (%)	LEAF SENESCENCE (At harvest 9=good, 1=poor)	EYESPOT RATING (9=good, 1=poor)	STARCH YIELD (t/ha)	REL STARCH YIELD %	STARCH (% at harvest)	ME YIELD (MJ/ha at harvest)	REL ME YIELD %	ME MJ/kg DM of fresh plant at harvest	CELL WALL DIGESTIBILITY **	YEAR LISTED
Mean of All Varieties				*34.5*		*18.1*	*100*	*7.3*	*7.5*	*1.7*	*5.6*	*7.0*	*5.8*	*100*	*32.0*	*207,131*	*100*	*11.5*	*7.0*	
LATE	**LG31207** NEW	**6**	**210**	**35.3**	**7**	**18.7**	**104**	**8.2**	**8.0**	**0.6**	**6.1**	**7.5**	**5.9**	**102**	**31.6**	**217,115**	**105**	**11.6**	**8.5**	**2023**
LATE	**LG31205**	**6**	**200**	**35.2**	**7**	**18.3**	**101**	**7.6**	**7.6**	**1.6**	**6.1**	**8.2**	**6.0**	**104**	**33.0**	**211,640**	**102**	**11.6**	**7.5**	**2018**
LATE	ABRISSE	7	200	36.3	11	17.4	96	7.3	8.0	0.6	4.3	7.9	5.9	102	34.0	203,533	98	11.7	9.1	2022
LATE	SY KARTHOUN	6	210	35.3	7	18.0	99	7.6	6.9	3.0	6.0	7.5	5.8	100	32.1	201,704	97	11.2	5.6	2018
LATE	ACTUAL	7	200	37.9	16	16.9	93	7.3	7.8	1.0	4.4	6.3	6.1	105	36.1	198,948	96	11.8	8.6	2018
VERY LATE	**MANTILLA**	**6**	**210**	**34.6**	**5**	**18.6**	**103**	**7.5**	**7.6**	**1.4**	**6.3**	**6.8**	**5.9**	**102**	**32.0**	**214,034**	**103**	**11.5**	**7.8**	**2021**
VERY LATE	SMOOTHI CS	4	220	33.2	0	18.4	102	7.2	7.7	1.3	5.6	7.1	5.9	102	32.1	210,447	102	11.5	7.1	2022
VERY LATE	ES METRONOM.	4	220	32.4	-3	18.9	105	7.2	8.0	0.6	6.7	7.8	5.3	91	27.8	211,507	102	11.2	6.4	2018
VERY LATE	AGA GOLD	4	220	33.7	2	17.9	99	7.1	7.7	1.2	6.1	6.7	5.8	100	32.6	207,899	100	11.7	8.2	2018
VERY LATE	PETROSCHKA	4	220	33.2	0	18.3	101	6.8	7.3	2.1	5.7	5.6	5.7	98	31.0	206,006	99	11.3	5.9	2018
VERY LATE	MARCAMO	6	210	34.9	6	17.8	98	7.0	6.2	4.5	3.6	7.1	5.6	97	31.6	201,232	97	11.3	5.7	2018

NEW New in 2024 ** Cell Wall Digestibility (%) minus 50 * MC = Limagrain Estimation of Maturity class and FAO rating # Limagrain estimate of days earlier to harvest than Smoothi CS

Data on later maturing varieties suitable for sites with very high heat unit potential

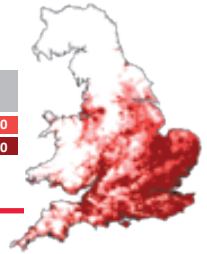
Growers on sites which receive an exceptionally high level of heat units (OHU's) during the season, can utilise maize varieties of FAO210 or above. Geographically, this tends to be in the East and South East of England.

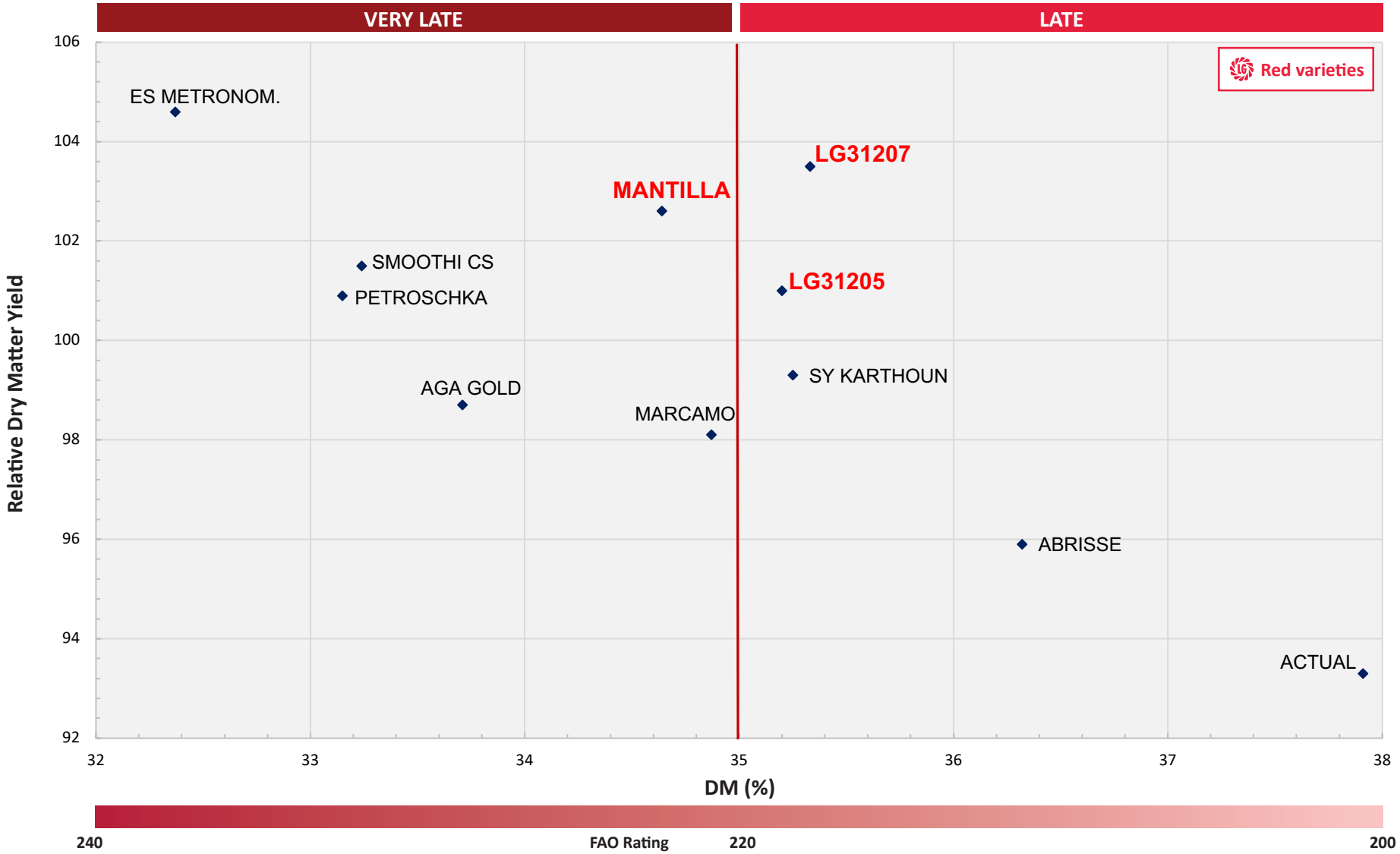
New data from independent trials is now available that shows the potential performance of varieties grown in these areas.

RELATIVE DRY MATTER YIELD v DM%

BSPB/NIAB Descriptive List for Forage Maize 2024: Very Favourable Sites

Maturity Group	FAO Range
LATE	FAO 200-220
VERY LATE	FAO 220-250





MAIZE FOR VERY FAVOURABLE SITES

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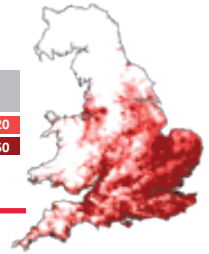
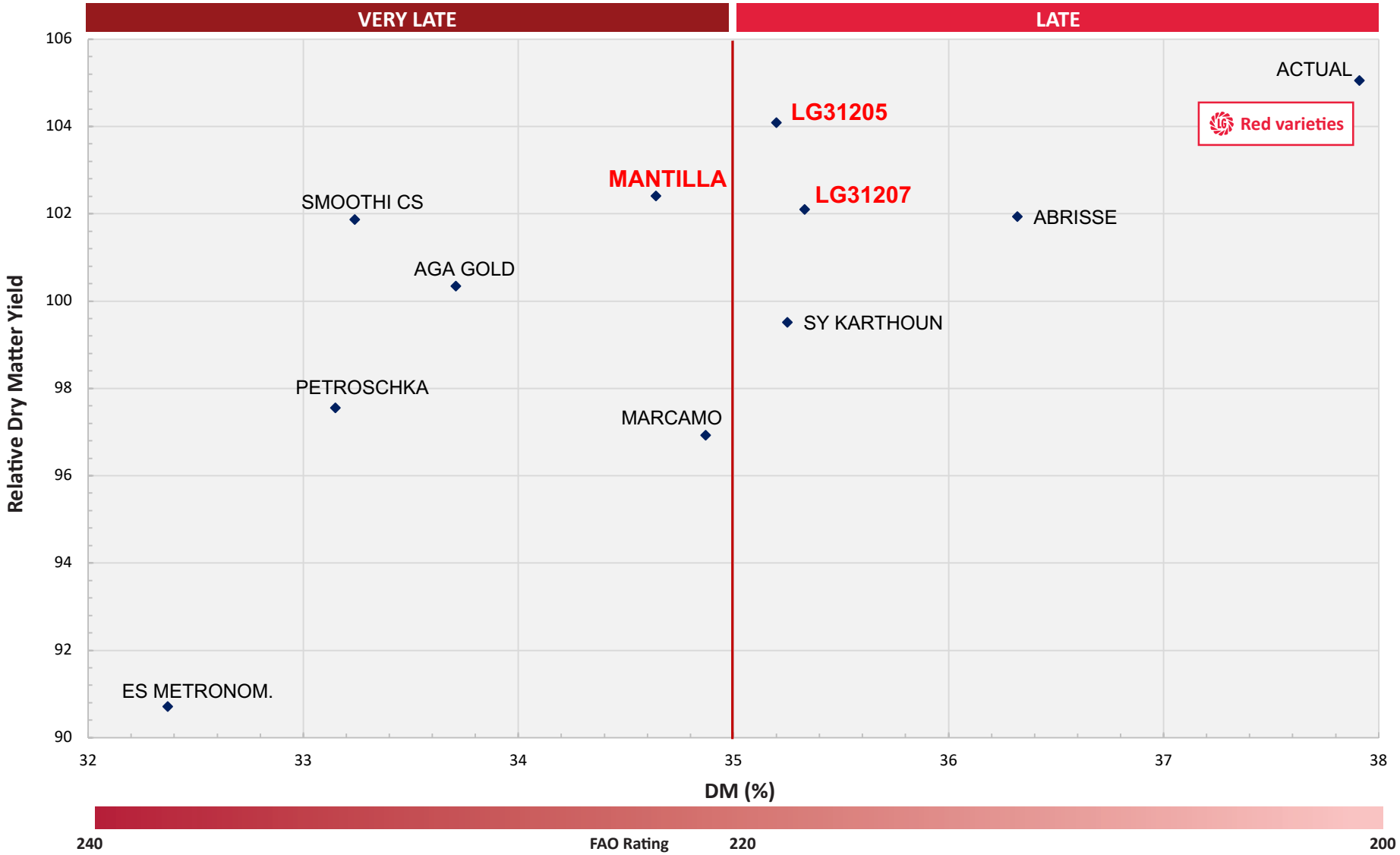
RELATIVE STARCH YIELD v DM%

BSPB/NIAB Descriptive List for Forage Maize 2024: Very Favourable Sites

Maturity Group	FAO Range
LATE	FAO 200-220
VERY LATE	FAO 220-250

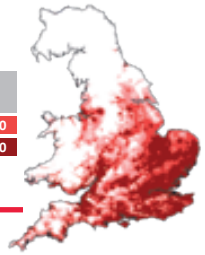


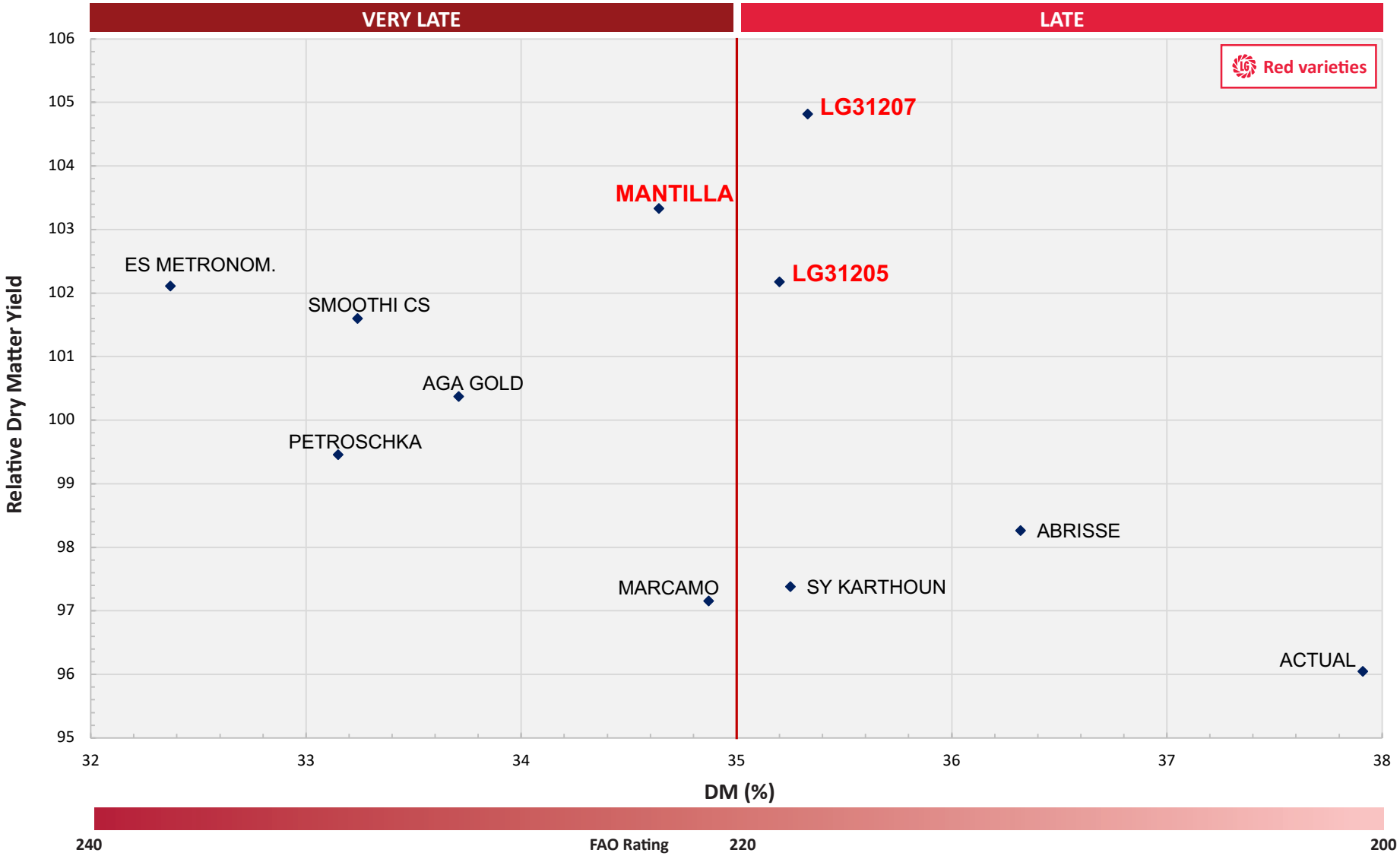


RELATIVE ME YIELD v DM%

BSPB/NIAB Descriptive List for Forage Maize 2024: Very Favourable Sites

Maturity Group	FAO Range
LATE	FAO 200-220
VERY LATE	FAO 220-250





MAIZE FOR VERY FAVOURABLE SITES

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MAIZE VARIETIES FOR ANAEROBIC DIGESTION (AD)

Maize variety selection for AD production

Maize can be successfully grown in most areas of the UK, but it is important to choose varieties suited to the growing conditions of your farm and can achieve a dry matter content of 30-32%.

As large areas of maize are needed to feed an AD plant, a range of varieties with different maturities should be sown. This enables harvesting before wet weather sets in and helps to avoid soil structure damage.

Recommended LG maize varieties

The extensive UK-based LG research programme has tested potential new varieties against current commercial ones at trial sites across the country and on working AD plants, for over five years.

LG have used a vigorous selection process to ensure that only the very best varieties are available to growers.

Check out the Feed Manager section of our Maize Manager App, available from the Apple and Google Play stores.

Download on the App Store

ANDROID APP ON Google play

Independent data on high yielding varieties suitable for very favourable sites

Independent data on late maturing and exceptionally high yielding varieties can be found on the newly published BSPB/NIAB 'Varieties for Very Favourable Sites'. Data can be found on pages 22 to 25.

Some varieties used for AD do not appear on this list, but have been thoroughly tested in LG trials. Performance for these varieties can found in the LG AD trials charts on pages 27-29.

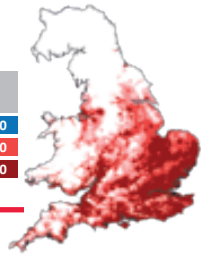
Recommended for AD

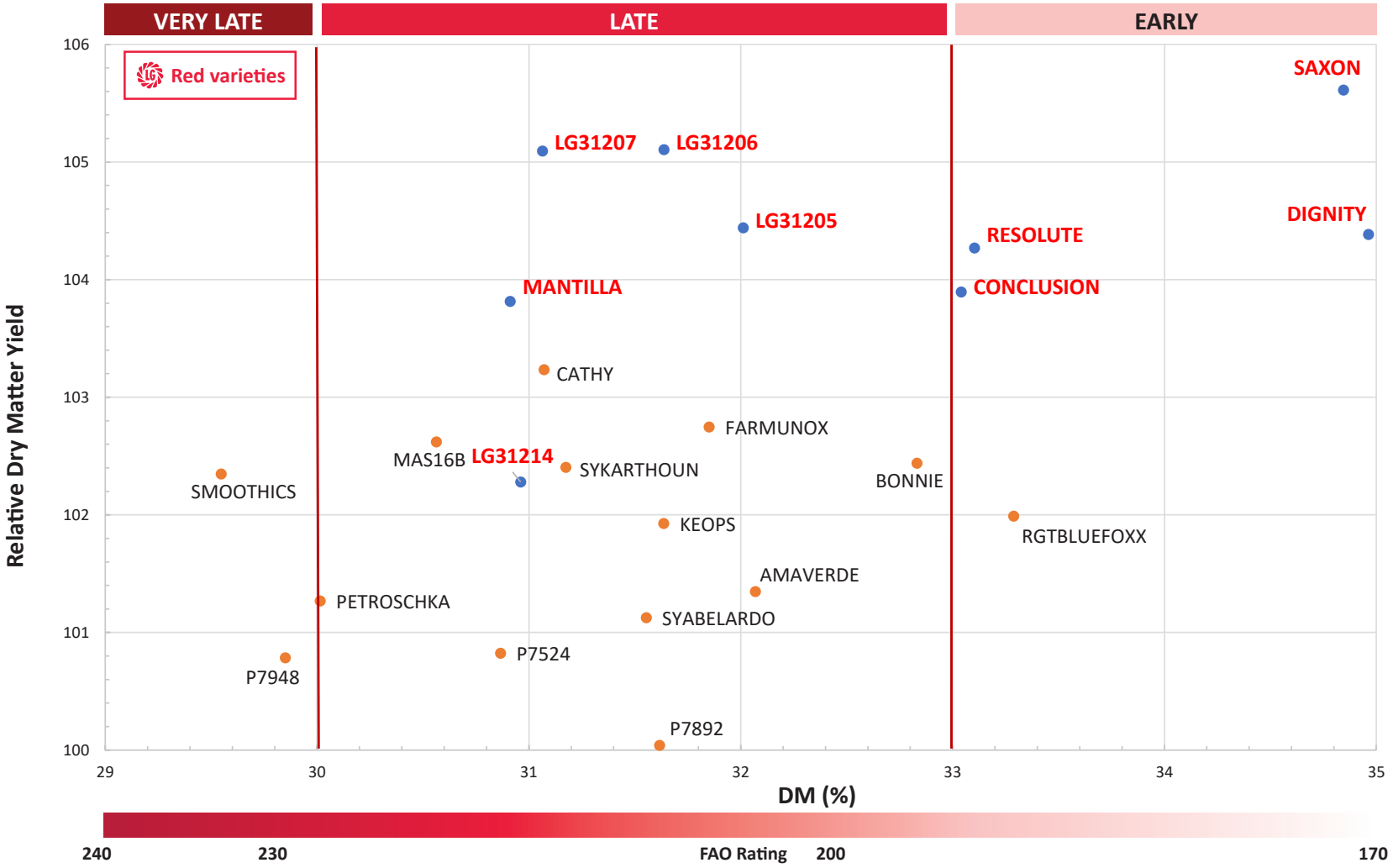
MATURITY	VARIETY	DESCRIPTION	FAO
EARLY	Dignity	Early, high quality with excellent yields	170
	Saxon	Impressive yield and impressive quality	180
	Conclusion	Vigorous with high energy yield	190
	Resolute	Very high yielding with high energy values	190
LATE	LG31.205	High ME yield from an early harvest	200
	LG31.206	Super quality from mainstream harvest	200
	LG31.207	Very high yielding with excellent vigour	210
	Mantilla	High yielding with good agronomics	210
VERY LATE	Ashley NEW	High yielding and adapted to lighter land	230

RELATIVE DRY MATTER YIELD v DM%

LG Variety Trials for Anaerobic Digestion (2018-22)

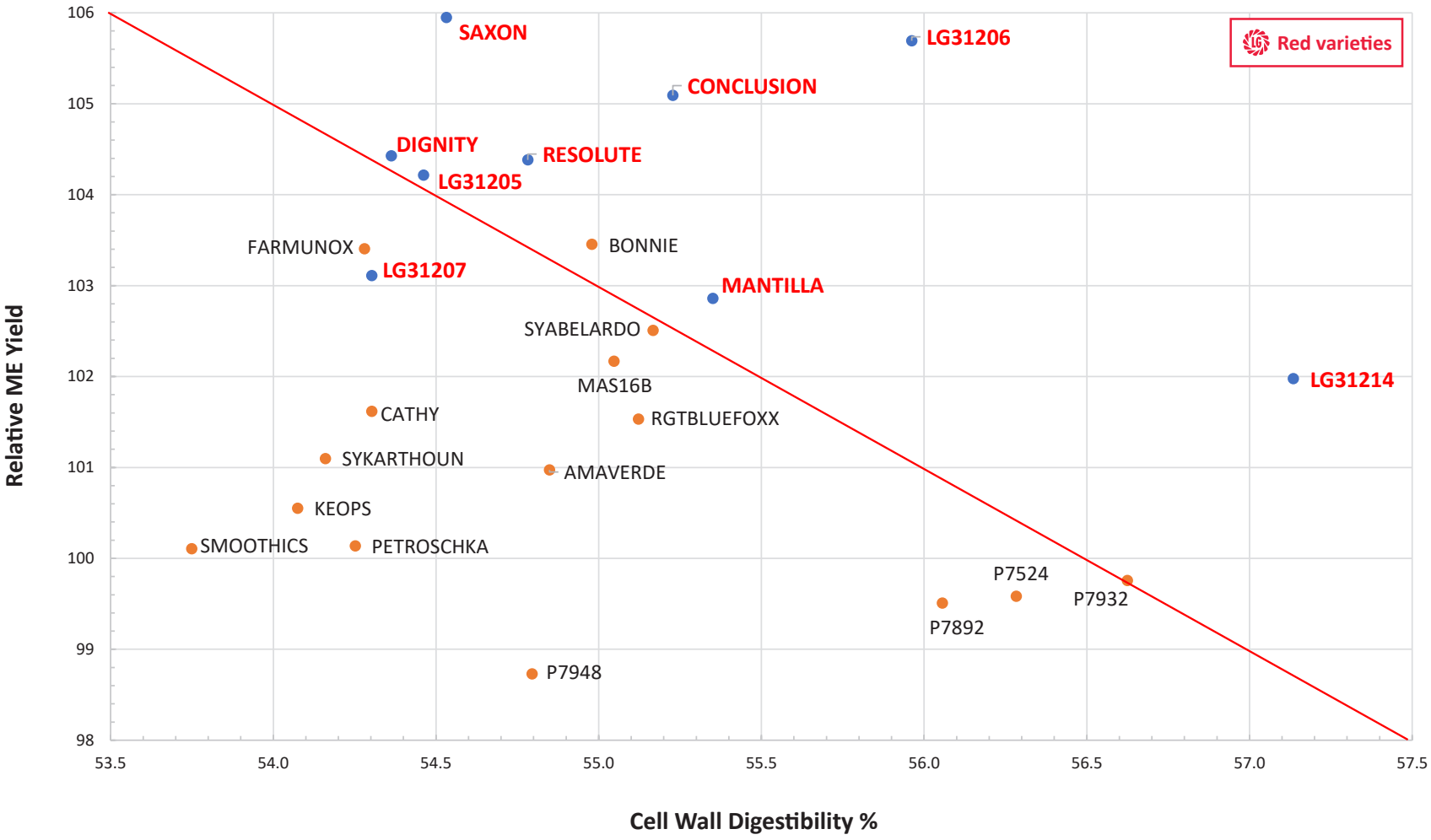
Maturity Group	FAO Range
EARLY	FAO 170-200
LATE	FAO 200-220
VERY LATE	FAO 220-250





CELL WALL DIGESTIBILITY % v ME YIELD

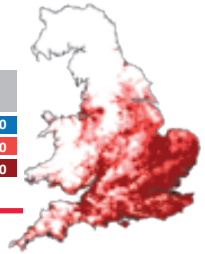
LG Variety Trials for Anaerobic Digestion (2018-22)

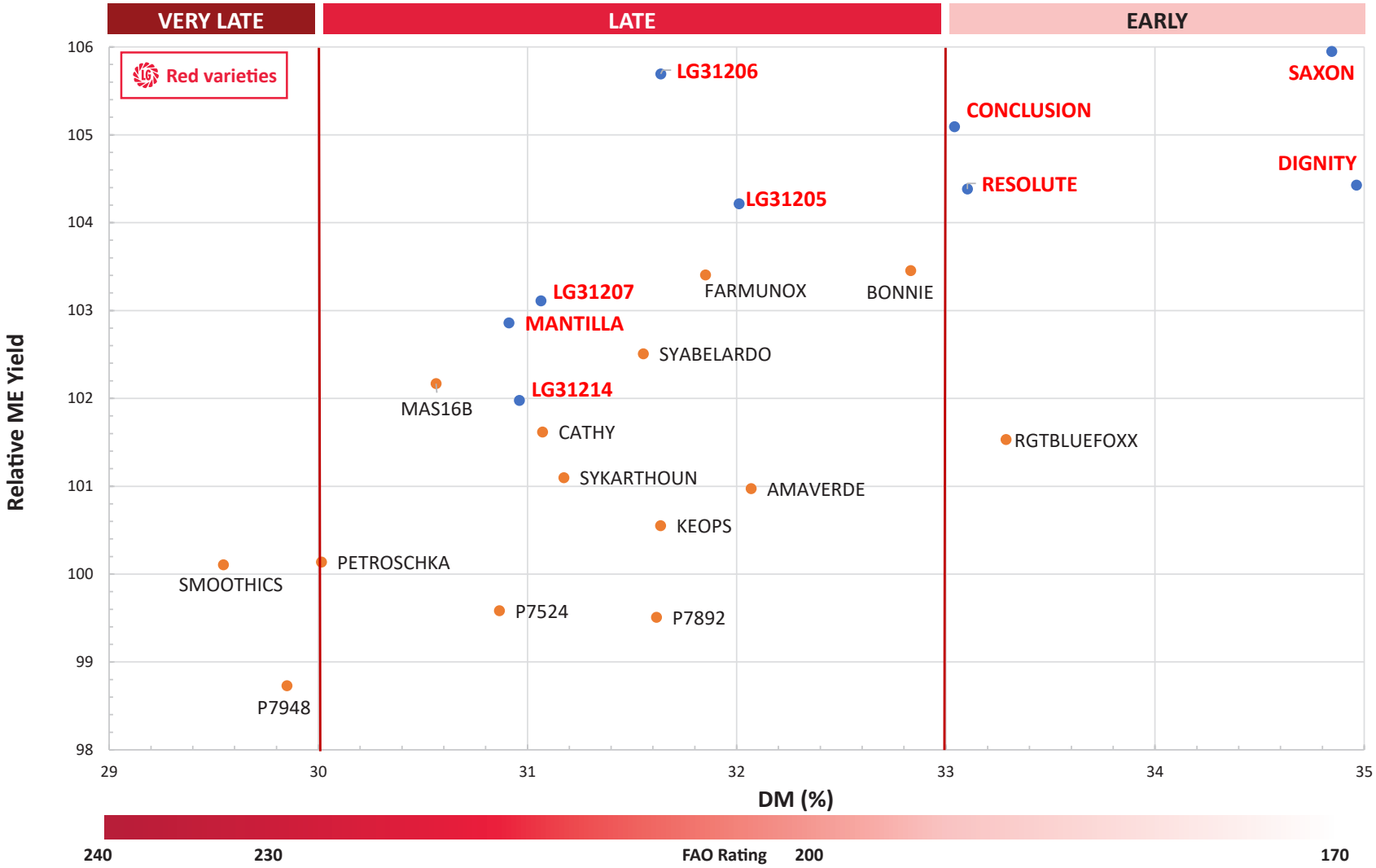


RELATIVE ENERGY (ME) YIELD v DM%

LG Variety Trials for Anaerobic Digestion (2018-22)

Maturity Group	FAO Range
EARLY	FAO 170-200
LATE	FAO 200-220
VERY LATE	FAO 220-250





MAIZE FOR ANAEROBIC DIGESTION

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MAIZE FOR CRIMPING OR GRAIN

Growing maize for grain is an attractive cash crop option, and for arable farmers has the added benefit of breaking the cereals rotation, giving an opportunity to reduce blackgrass populations.

An adjusted combine can be used to harvest the maize at around 30% moisture content.

Crimping or Grain?

Mature maize crops can be combined for their grain (kernels), from which crimped maize or dried grain can be produced.

Dried Grain Maize

Use: Dried grain maize is used by feed compounders, or in the bird and pet food industry. This specialised market demands a high quality grain sample with kernels of an attractive yellow colour.

Yield: Grain yield 7-10 t/ha @ 15% MC

Recommended varieties: Conclusion, LG30.179 and Pinnacle

Crimped Maize

Use: Moist crimped grain maize of 25-35% MC for cattle and pig feed. For this larger market, maize grains are treated with a preservative to create a moist and digestible high energy feedstuff, with a metabolisable energy content of 14.0-14.5 MJ/kg DM.

Yield: Crimped yield 10- 12t/ha @ 65% DM.

Recommended varieties: Conclusion, LG30179, Pinnacle, Prospect, Resolute and Ashley

Variety selection for grain and crimping use

To harvest maize for grain, the crop needs to reach a moisture content of 25-35% (DM of 65-75%) before being combined.

This means the crop has to be left longer in the field to dry down.

Important variety selection criteria:

- Disease resistance
- Grain dry down
- Standing power
- High grain yield

Good cob cover will also reduce susceptibility to Fusarium infection.

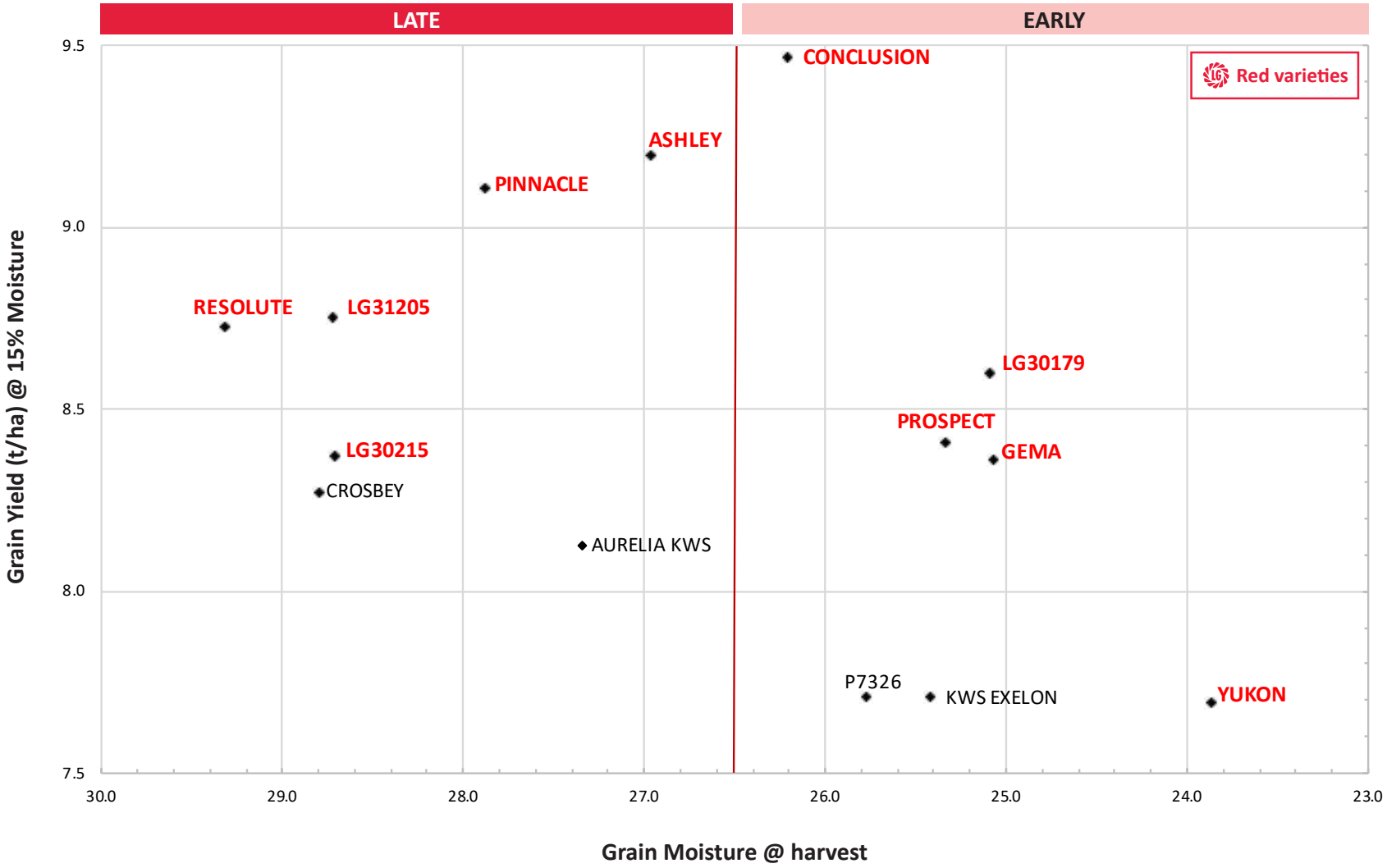
LG Grain Trials

Currently there are no official trials in the UK to test varieties for grain or crimping use. LG has established a network of three trials within recognized grain maize growing areas to assess the potential of LG varieties.

This involves establishing the trial within a commercial grain crop and harvesting at the same time using a specialist trials grain harvester. Varieties are assessed for yield and many other criteria including disease, grain colour, lodging and moisture content. Results are adjusted to 15% moisture content.

GRAIN VARIETY TRIALS

LG Trials (2022) Yield adjusted to 15% Moisture Content



ESTABLISHMENT AND BIRD CONTROL

Sowing Advice

Damage caused by birds

Maize is most vulnerable to bird damage during early emergence, up to 3-4 leaf phase. Rooks and other corvids can pick out newly sown seeds or small seedlings, working down the row and causing substantial losses.

Bird Control

Key to avoiding this issue is to ensure that no grains are left lying on the surface and that the seed is drilled to the correct depth and well covered, so as not to attract attention.

Avoid drilling an isolated crop of maize in a high risk area, such as near woodland or a rookery. It may be possible to drill seed to a deeper depth of 7-10cm to deter rooks from digging up the seed, however sowing at this depth can be problematic for the seed to germinate successfully, especially in heavier soils.

Always check that soil temperature has consistently reached 10°C at drilling depth for at least 4 consecutive days before drilling and check the medium term weather forecast will remain warm.

KORIT® PRO

The unique formulation on Korit® PRO provides protection from birds and soil-borne, damping off diseases. It also contains micronutrients to aid early plant development, assisting the plant to grow in this crucial stage.

Korit® PRO provides protection

- Bird repellent against crows, rooks and pheasants
- Fungicide protection against damping off diseases including Pythium and Fusarium

Korit® PRO improves growth:

- Increased rooting power, with plants developing a healthy and productive root system
- Better plant health and anchoring up to harvest
- Inclusion of manganese to aid chlorophyll formation and photosynthetic action
- Inclusion of zinc to aid protein formation, particularly beneficial if soils become cold or wet

Successful establishment is reliant upon 4 main factors:

- Sufficient moisture being available; ensure a fine seedbed with soil in contact to seed
- A warm and rising soil temperature for four or more days of a minimum 10˚C at drilling depth
- Drilling to an appropriate soil depth of between 5-8cm and not too deep in heavy soils
- Drilling into well aerated soils, maize will not thrive in compacted soils without oxygen

ESTABLISHMENT AND INSECT CONTROL

Sowing Advice

Insect Damage

Wireworms

Commonly found when maize is sown for the first three years after ploughing grass. The larvae are yellow, legless and up to 35mm long. They feed on the grass root debris and the new maize plants up to 5-6 leaf stage. Damage is seen in patches of the field with affected plants struggling or dying.

Frit Fly

Causes damage up to the 4 leaf stage. Common after an initially warm period encouraging egg laying by the adult fly. Larvae are pale yellow and 4mm long and eat across the leaf veins. Plants either die or become stunted with twisted leaves.

Insect Control

Cultivating early to temporarily remove the insects feed source, combined with sowing later into a warm damp seedbed can help.

Getting maize crops established in good conditions and up and away quickly, are the foundations of a successful crop.

starcover FORCE active+

The insecticide seed treatment Force can help limit damage, but will not provide 100% control. Adding the biological growth enhancer Starcover Active Plus can help the crop to develop rapidly and grow away from the attack.

Improved Root Development

Starcover Active Plus encourages the rapid development of a strong root system that enables maize to flourish during the difficult early growth phase and to continue to grow strongly throughout the season. Root structure is visibly bigger with more defined root hairs on Starcover Active Plus treated maize plants, helping to increase uptake of both moisture and nutrients.

Plant Growth Promoting Rhizobacteria (PGPR)

PGPR colonise the root zone and stimulate root hair development. Through a symbiotic relationship, the bacteria increase the availability of soil nutrients phosphorus, nitrogen and other trace elements to the plant. Plants treated with Starcover Active Plus tend to amass more growth in the early pre-flowering stages, leading to a better developed adult plant.

A stronger, healthier plant is more likely to withstand environmental stresses during the growing season, limiting the risk of reduced productivity. Trials have shown that Starcover Active Plus treated plants have an increased starch, energy and dry matter yield.

COMMON DISEASES IN MAIZE

Diseases are most problematic after flowering and in the lead up to harvest

Eyespot (Kabatiella Zeae)

Eyespot is particularly prevalent in cooler summers with high humidity with spores spread by the wind. Infection develops early after flowering and if left unchecked it can have a devastating effect on both crop yield and quality.

Early signs are appearance of small leaf spots with a yellow halo and can lead to the entire plant dying off before filling of the cob.

Cultivation & Sprays

Eyespot can be carried over in the stubble, so ensure it is well incorporated into the soil and practice good crop rotation where possible. Timely application of an appropriate fungicide spray can control the disease.

Variety Tolerance

Varieties with good eyespot tolerance are available. See agronomy data on pages 6 and 14.

Eyespot showing on leaves

Stalk rot (Fusarium)

Occurs immediately before harvest and caused by the fungus Fusarium graminearum. Fusarium can lead to the sudden death of the plant and weakening of the stem causing lodging in the field. This is problematic as it creates difficulties at harvest and can also result in very high dry matter silage that is difficult to conserve in the clamp.

Fusarium impact on cobs

Stalk Rot Control

Fusarium cannot be controlled by using fungicide sprays. The most effective way to avoid this problem is to choose varieties that have good resistance to this disease.

Plants dying off with fusarium

VARIETIES FOR GROWING UNDER PLASTIC COVER

Using plastic cover

The 'under plastic' system was developed in Ireland to enable farmers in more marginal climates to grow maize successfully. In the UK, it can be of benefit in advancing crop maturity in very marginal areas, such as Scotland and areas of high altitude and rainfall, in England and Wales.

The plastic cover acts like a greenhouse and warms the seedbed to 8˚C sooner, thereby encouraging seeds to germinate and become established earlier in the spring. It increases the total heat accumulation of the growing crop bringing forward maturity. This facilitates either an earlier harvest or the growing of a later variety with a higher yield potential.

Agronomy

Plastic cover adds an extra growing cost of around £250/hectare. This is partially offset by the use of a lower seed rate of 100,000 seeds/ha (40,000 seeds/acre). Recently there has been a move to using more biodegradable plastic in single rows, with an increase in costs.

Good weed control prior to sowing is vital. A pre-emergence herbicide spray is applied at the time of sowing but after this, options are limited due to the plastic cover.

Variety selection for under plastic

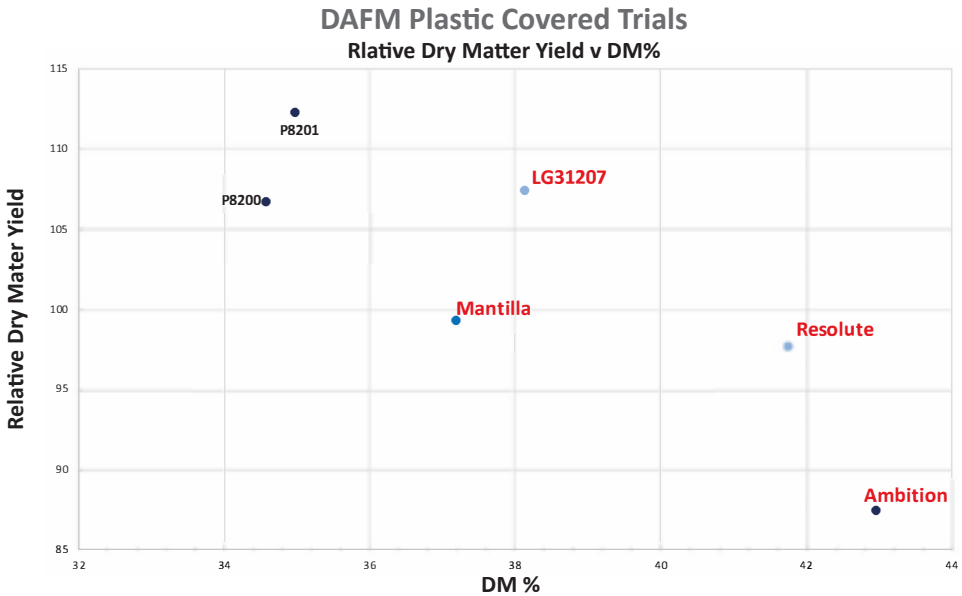
The only source of Independent data on how maize varieties perform under plastic is DAFM (Department of Agriculture, Food and the Marine) in Ireland. The LG varieties **Ambition**, **Foxtrot**, **LG31207** and **Resolute** perform exceptionally well under the plastic covered system.

DAFM Recommended varieties for Forage Maize 2021

SUITABLE FOR GROWING UNDER PLASTIC COVER

		YIELD DATA		STARCH DATA			ENERGY DATA		
VARIETY	DM% (at harvest)	DM YIELD (t/ha)	REL DM YIELD (%)	STARCH (% at harvest)	STARCH YIELD (t/ha)	REL STARCH YIELD %	ME MJ/kg DM of fresh plant at harvest	ME YIELD (MJ/ ha at harvest)	REL ME YIELD %
Mean of Controls		*19.2*			*5.8*			*229,522*	
AMBITION	43.0	16.7	87	33.7	5.6	97	12.1	203445	89
RESOLUTE*	41.8	18.7	98	30.9	5.8	100	12.0	223903	98
LG31207*	38.2	20.6	107	31.1	6.4	110	12.0	246939	108
MANTILLA*	37.2	19.0	99	28.9	5.5	95	11.9	226989	99
P8201	35.0	21.5	112	30.6	6.6	114	12.0	257002	113
P8200	34.6	20.4	107	27.4	5.6	96	11.6	237558	104

*Limited data - not yet fully recommended



UNDERSOWING MAIZE

Grass Under Maize

Growing a crop of maize typically means sowing in April/May and harvesting in September/October. This can leave a period of up to six months where there's an opportunity to use a second crop to gain extra production.

This second crop can be established alongside the maize by undersowing or if early maturing varieties are used, there should be sufficient time to sow a crop into the maize stubbles (see page 37).

Benefits of Undersowing

Good Environmental Practice

Undersowing maize crops with grass helps prevent soil erosion and the loss of valuable nutrients over the winter months. Damage to soil structure by harvest machinery can also be reduced. The presence of an established understorey of grass will stabilise ground conditions in the event of a wet harvest.

Opportunity for Extra Production

An undersown crop of grass can be grazed by livestock over the winter or cut for silage the following spring giving year round production.

Eligible for Sustainable Farming Incentive (SFI) Payment

Establishing a companion crop of grass with maize meets the requirements of SFI action IPM3 Companion crops on arable and horticultural land worth £55/Ha.

Recommended mixtures and sowing time and rates

The table below gives typical sowing rates and mixture types to use when undersowing. For best establishment, seed should be drilled rather than broadcast and kept 15cm away from the maize plants to avoid any detrimental yield effects.

Maize Crop Growth Stage	Sowing rate	Mixture type	Variety / mixture names
At Drilling	8kg/Ha	Tall Fescue and Festulolium	LG Under Maize mixture
At 6 leaf stage	15kg/Ha	Festulolium (grazing and cutting types)	LG Over Maize mixture

MANAGING MAIZE STUBBLES

If an early maturing maize variety has been chosen, winter crops such as cereals may be sown after harvest. Maize crops may also be undersown with grass as described on page 36.

Stubble Management and Cropping Options

It is quite common for maize stubbles to be left bare over the winter. This is not only a missed opportunity to produce more forage, but also can lead to soil related problems such as surface water run-off, soil erosion and loss of valuable soil nutrients.

Cultivating with a chisel plough across the stubble rows will help remove surface capping and prevent surface water run off and erosion. However, sowing a crop such as Humbolt forage rye or Westerwolds ryegrass offer far greater benefits.

Using a cover crop such as LG Lift N Fix which contains Humbolt forage rye and Vetch meets the requirements for the SFI action SAM2 Multi-species winter cover crops worth £129/Ha.

Maize field left uncultivated over winter showing compaction issues

Humbolt Forage Rye

SOWING INFORMATION:
Seedbed needs to be firm and well consolidated. Direct drill to a depth of 3-5cm (cross drilling will promote a thicker stand).

SOWING RATE:
Between 160-185kg/ha (65-75kg/acre)

FEEDING:
Crude Protein: 12%
ME: 10 MJ/kg
Humbolt can be grazed, zero grazed or baled.

Westerwolds Ryegrass

SOWING INFORMATION:
Westerwolds offers the highest yield of any ryegrass and is ideal for sowing after maize. It has good ground cover, enabling an early spring harvest of the subsequent crop.

SOWING RATE:
37kg/ha (15kg/acre)

FEEDING:
Crude Protein: 15%
ME: 10.6 MJ/kg
Westerwolds can be grazed, cut or baled.

	Prevent run off	Build organic matter	Retention of soil nutrients	Crop output	Timing
Humbolt forage rye	✓	✓	✓	✓	Sept - Oct
Westerwolds ryegrass	✓	✓	✓	✓	Sept - Oct
Undersowing grass	✓	✓	✓	✓	June - July
Cover crop	✓	✓	✓	✗	Sept - Oct
Chisel ploughing	✓	✗	✗	✗	Sept - Nov

SECOND CHOICE VARIETIES FOR LESS FAVOURABLE SITES

BSPB/NIAB Descriptive List for Forage Maize 2024: Less Favourable Sites

RANKED BY EARLINESS

		MATURITY				YIELD DATA		AGRONOMIC DATA					STARCH DATA			ENERGY DATA			DIGESTIBILITY	
MATURITY GROUP	VARIETY	MATURITY CLASS *	FAO RATING *	DM% (at harvest)	EARLIER/ LATER TO HARVEST (#Days +/- Ambition)	DM YIELD (t / ha)	REL DM YIELD (%)	EARLY VIGOUR (9=good, 1=poor)	STANDING (at harvest 9=good, 1=poor)	LODGING (%)	LEAF SENESCENCE (at harvest 9=good, 1=poor)	EYESPOT RATING (9=good, 1=poor)	STARCH YIELD (t/ha)	REL STARCH YIELD %	STARCH (% at harvest)	ME YIELD (MJ/ha at harvest)	REL ME YIELD %	ME (MJ/kg DM of fresh plant at harvest)	Cell Wall Digestibility **	YEAR LISTED
Mean of the year 4 & 5 varieties				*34.8*	*35.0*	*17.9*	*100*	*6.9*	*7.3*	*2.1*	*6.7*	*5.6*	*6.2*	*100*	*34.9*	*210.187*	*100*	*11.8*	*9.0*	
VERY EARLY	RGT DUXXBURY	11	150	37.2	8	16.6	93	6.9	7.7	1.4	5.5	5.5	6.1	98	37.1	195,060	93	11.8	8.6	2018
	AVITUS KWS	11	160	36.7	6	17.9	100	7.0	5.5	6.2	5.7	5.8	6.6	106	36.9	213,414	102	11.9	9.2	2018
	DEBALTO	11	150	36.3	5	17.8	99	6.9	2.7	13.5	5.6	6.6	6.1	98	34.5	206,780	98	11.6	7.9	2022
	KWS EXELON	10	170	35.4	1	18.4	103	6.9	6.2	4.5	6.6	7.7	6.5	103	35.1	216,244	103	11.8	8.8	2021
EARLY	FOXTROT NEW	9	170	34.9	0	18.3	103	7.1	5.6	5.9	7.2	[2.0]	6.4	103	35.1	218,008	104	11.9	9.9	2023
	ES LOVELY	9	170	34.8	-1	17.3	97	6.9	7.8	1.0	6.2	4.4	6.2	100	36.1	202,263	96	11.7	8.2	2016
	ES TOMMEN	8	180	33.9	-4	17.2	96	7.3	7.8	1.0	6.4	3.6	5.9	94	34.0	199,959	95	11.6	8.4	2021
	ES MYRDAL	8	190	33.7	-5	18.7	105	7.2	6.0	5.0	7.5	6.0	5.5	88	29.3	212,697	101	11.4	8.1	2022
	RGT PIXXON	8	180	33.6	-5	17.5	98	6.7	7.8	1.0	7.6	6.3	5.3	85	30.3	202,622	96	11.6	9.7	2022
	RGT EASIXX NEW	7	180	33.4	-6	18.4	103	6.5	7.6	1.5	7.6	5.3	5.8	93	31.4	211,779	101	11.5	8.6	2023
	ABILITY	7	190	33.0	-7	18.4	103	6.9	7.9	0.9	7.6	5.6	5.8	93	31.4	213,703	102	11.6	9.1	2020
	RGT BLUEFOXX NEW	7	190	32.6	-8	17.9	100	6.8	8.0	0.8	7.7	5.1	5.6	90	31.3	208,391	99	11.6	9.7	2023
LATE	KWS RESOLVO NEW	6	190	32.0	-10	17.9	100	6.9	7.9	0.8	6.7	5.9	5.7	92	31.8	207,135	99	11.6	8.8	2023
	FARMUNOX	6	200	31.7	-12	18.7	105	6.5	6.3	4.4	8.0	6.7	6.2	99	33.0	220,083	105	11.7	8.9	2020

NEW New in 2024 ** Cell Wall Digestibility (%) minus 50 * MC = Limagrain Estimation of Maturity Class and FAO rating # Limagrain estimate of days earlier / later to harvest than Ambition, the BSPB/NIAB early control variety
[ ] Limited data, Eyespot rating derived from incoulated nurseries

SECOND CHOICE VARIETIES FOR FAVOURABLE SITES

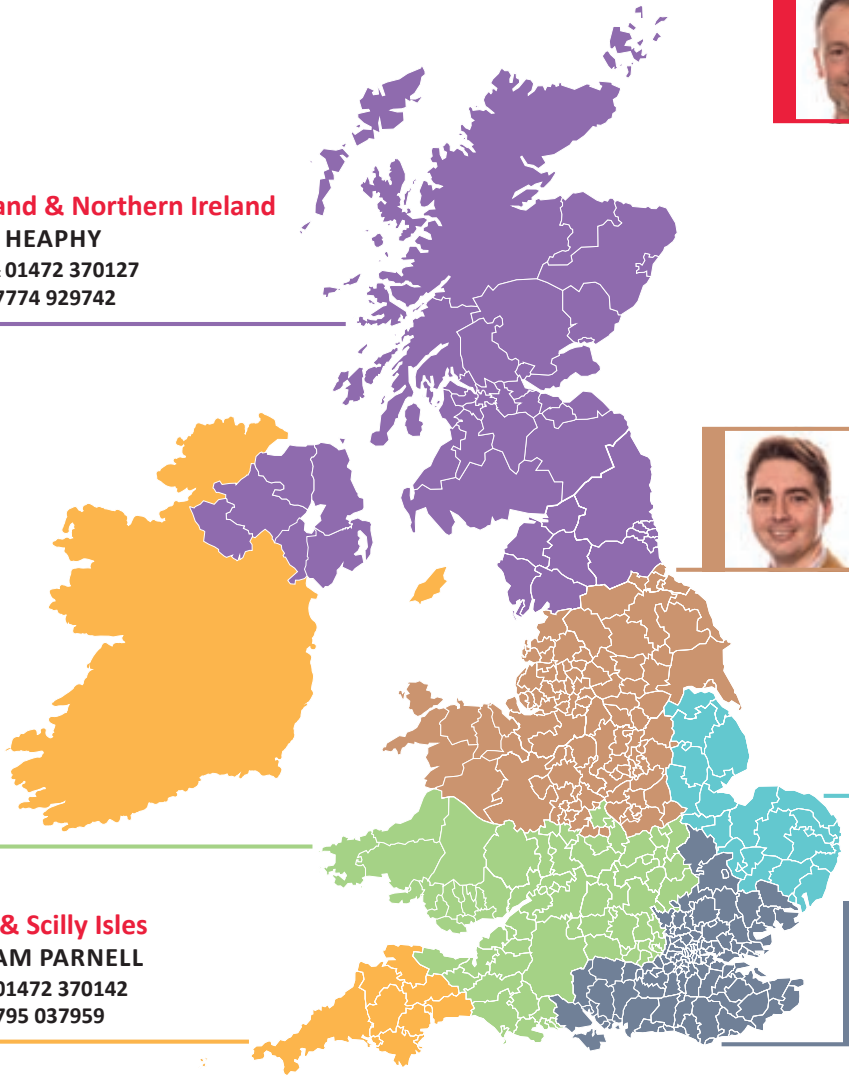
BSPB/NIAB Descriptive List for Forage Maize 2024: Favourable Sites

RANKED BY EARLINESS

		MATURITY				YIELD DATA		AGRONOMIC DATA					STARCH DATA			ENERGY DATA			DIGESTIBILITY	
MATURITY GROUP	VARIETY	MATURITY CLASS *	FAO RATING *	DM% (at harvest)	EARLIER/ LATER TO HARVEST (# Days +/- Ambition)	DM YIELD (t/ha)	REL DM YIELD (%)	EARLY VIGOUR (9=good, 1=poor)	STANDING (at harvest 9=good, 1=poor)	LODGING (%)	LEAF SENESCENCE (at harvest 9=good, 1=poor)	EYESPOT RATING (9=good, 1=poor)	STARCH YIELD (t/ha)	REL STARCH YIELD %	STARCH (% at harvest)	ME YIELD (MJ/ha at harvest)	REL ME YIELD %	ME MJ/kg DM of fresh plant at harvest	Cell Wall Digestibility **	YEAR LISTED
Mean of the 4 & 5 year varieties				*34.1*	*35.1*	*18.2*	*100*	*7.0*	*7.6*	*1.6*	*6.9*	*5.8*	*6.2*	*100*	*33.8*	*213,241*	*100*	*11.7*	*9.0*	
VERY EARLY	DEBALTO	11	150	36.6	5	18.5	102	7.2	4.9	7.4	5.8	6.6	6.3	103	34.3	214,708	101	11.6	7.6	2022
VERY EARLY	RGT DUXXBURY	11	150	36.5	5	17.0	94	7.0	7.9	0.8	6.0	5.5	6.1	99	35.7	199,711	94	11.7	8.6	2018
VERY EARLY	**AMBITION**	**10**	**170**	**35.1**	**0**	**18.3**	**100**	**7.2**	**8.0**	**0.7**	**7.0**	**6.4**	**6.3**	**102**	**34.5**	**213,112**	**100**	**11.7**	**8.3**	**2012**
EARLY	ES LOVELY	9	170	34.6	-2	17.6	97	7.0	8.0	0.8	6.5	4.4	6.2	101	35.3	205,411	96	11.7	8.5	2016
EARLY	RGT PIXXON	8	180	34.4	-2	17.9	99	6.8	7.8	1.1	7.5	6.3	5.6	91	31.2	209,395	98	11.7	9.9	2022
EARLY	RGT OXXGOOD	8	180	34.3	-3	17.9	99	6.7	7.5	1.8	6.6	6.5	6.1	99	34.2	210,703	99	11.8	9.3	2016
EARLY	ES TOMMEN	8	180	33.9	-4	17.6	97	7.4	7.9	0.8	6.7	3.6	5.9	96	33.7	205,107	96	11.6	8.6	2021
EARLY	LIROYAL	8	180	33.9	-4	17.7	97	6.5	7.8	1.1	6.5	6.1	6.2	101	35.2	209,700	98	11.9	9.6	2019
EARLY	RGT EASIXX NEW	8	180	33.6	-5	18.5	102	6.5	7.9	0.9	7.4	5.3	5.7	93	30.8	211,977	99	11.5	8.4	2023
EARLY	RGT BLUEFOXX NEW	8	190	33.3	-6	18.5	102	6.7	8.0	0.6	7.6	5.1	5.7	93	30.9	215,295	101	11.6	9.7	2023
EARLY	SY NORDICSTAR	8	190	33.2	-7	17.8	98	7.1	7.5	1.8	7.2	7.9	5.9	96	33.2	207,423	97	11.7	9.2	2016
EARLY	ES MYRDAL	8	190	33.2	-7	19.0	105	7.2	7.1	2.7	7.4	6.0	5.5	90	28.9	216,599	102	11.4	8.1	2022
EARLY	LIKEIT	7	190	32.8	-8	17.9	99	7.2	8.1	0.4	7.0	4.7	5.9	96	32.9	208,902	98	11.7	8.5	2018
EARLY	KWS RESOLVO NEW	7	190	32.7	-9	18.0	99	7.0	8.0	0.5	6.6	5.9	5.7	92	31.6	208,834	98	11.6	9.0	2023
EARLY	GLENOE NEW	7	190	32.4	-9	18.2	100	6.9	7.9	0.8	7.6	4.7	5.1	83	28.1	206,088	97	11.3	7.9	2023
LATE	ABRISSE	6	200	32.0	-11	18.5	102	6.6	7.9	0.8	7.2	7.9	5.8	94	31.2	213,402	100	11.6	9.0	2019
LATE	**LG31207 NEW**	**6**	**210**	**31.3**	**-13**	**19.1**	**105**	**7.1**	**7.9**	**0.9**	**7.5**	**7.5**	**5.5**	**90**	**28.9**	**216,535**	**102**	**11.3**	**7.7**	**2023**
LATE	CATHY	6	210	31.2	-14	18.7	103	7.3	7.9	0.9	7.7	5.6	5.4	88	29.0	215,226	101	11.5	8.9	2015
LATE	MARCAMO	6	210	31.0	-14	18.0	99	6.5	5.2	6.7	6.5	7.1	5.3	86	29.4	202,109	95	11.2	6.4	2019

NEW New in 2024 ** Cell Wall Digestibility (%) minus 50 * MC = Limagrain Estimation of Maturity Class and FAO rating # Limagrain estimate of days earlier / later to harvest than Ambition, the BSPB/NIAB control variety

THE TEAM



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