Forage Maize Varieties

Irish Recommended List 2022

CROP POLICY, EVALUATION AND CERTIFICATION DIVISION

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

www.agriculture.gov.ie

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IMPORTANT NOTICE

The Department of Agriculture, Food and the Marine (DAFM) has taken all due care in evaluating the performance of the listed varieties for yield, quality, disease resistance and the important agronomic characters over a wide range of soils and environmental conditions, for a minimum period of 3 years. The Department cannot, however, accept responsibility for any loss or inconvenience arising from any future variation in absolute or relative varietal performance.

Introduction

This Recommended List details the covered forage maize varieties that are considered most suitable for growing under Irish conditions. The varieties included on the Recommended List have completed a minimum of three years in the DAFM trials. These trials were located in Cork, Kildare, Louth, Meath and Kilkenny and were grown in accordance with good farming practice. The data presented in this Recommended List is generally based on a three year average of trials harvested from 2019 to 2021.

Variety Testing Procedure

New varieties are submitted annually to the Department from Irish Agents acting on behalf of International plant breeders or directly from these breeders. These varieties enter combined National List/ Recommended List trials. All varieties on the Recommended List have shown excellent performance under Irish conditions. These varieties have been given a positive Value for Cultivation and Use (V.C.U.) status, thus resulting in them being listed in the National and EU catalogues of Agricultural Plant Varieties.

In Ireland, maize is sown in spring and until now has been grown under two production systems; 1. 'Covered', and 2. 'Uncovered'. The difference between both systems is that covered crops are sown under a thin plastic film spread over two crop rows that is applied to the soil surface at the time of sowing. This creates a mini greenhouse effect which quickly brings about a significant increase in the temperature of the air and soil underneath the cover and allows sowing to be carried out earlier than for uncovered crops.

In the last ten years there has been a large swing to growing covered Maize with an estimated 90% of the crop now grown in this system. Larger annual variability in yields and quality of uncovered versus covered crops has largely contributed to this swing. Uncovered trials ceased in 2014 but recommenced in 2020 in response to the then upcoming implementation of the Single Use Plastic Directive. The provisions of this Directive mean the plastic film used until now can no longer be marketed and existing stocks will be exhausted in 2022. Therefore, Covered trials using this plastic will not be continued by DAFM from 2022. It is planned to produce an Uncovered Recommended List in 2023 following the required minimum 3 year trialling period from 2020 to 2022.

Trials comprise up to 20 varieties annually (the full list of varieties on trial in both covered and uncovered trials are included in Appendices 1 and 3) and are grown at up to three DAFM centres and up to two external sites per year. The varieties are assessed for their suitability under Irish conditions for dry matter yield, dry matter content, starch content and other traits. The Recommended List only contains varieties that have shown excellent performance under Irish conditions, which are accepted as being unique and come with specific challenges to growing the crop successfully.

Growers should select the varieties listed because these varieties have been independently and robustly tested by DAFM over a minimum of 3 years under Irish conditions and have been proven to perform in these conditions.

Throughout the trial programme, efforts are being made to select better and earlier maturing varieties that will improve the yield and quality of the crop, as well as allowing it to be successfully grown in areas that were previously considered climatically marginal for forage maize production.

Types of Recommendation

Varieties appearing on this list for the first time are **Provisionally Recommended (PR)** and have completed three years in combined National List/ Recommended List (NL/RL) trials. The number after the PR (e.g. PR-1) indicates the number of years a variety has been provisionally recommended. The eventual status of these varieties is determined by the level of performance in ongoing NL/RL trials; fully **Recommended (R)** classification may be deemed to be merited after a further one, two or a maximum of three years, or alternatively they may be removed from the list at any stage.

Laboratory Analysis:

The Department of Agriculture, Food and the Marine take whole-crop samples from each trial plot at harvesting and dry them to determine the dry matter content. These dried samples are analysed by FBA Laboratories Ltd., Cappoquin, Co. Waterford and SRUC Laboratories in Scotland.

Changes to the 2022 Forage Maize Recommended List:

No new varieties have been added to the Recommended List in 2021. LG30211 has been removed from the list since 2021 because it is no longer in trial.

Explanation of Results:

Yield of Dry Matter/ha: Dry matter yield per hectare is calculated by measuring the fresh yield of the crop, eliminating the moisture content and expressing on a per hectare basis. The Recommended List shows the average dry matter yield of the control varieties on the 2022 DAFM Recommended List was 19.5t/ha. Relative yields are used to show differences between varieties with the average of the control varieties set at 100. Varieties with a value in excess of 100 achieved higher yields than the controls and varieties with a value less than 100 achieved lower yields than the controls.
Yield of dry matter for forage maize is the only true assessment of yield in maize crops because the nutritional value of the crop is contained within the dry matter fraction. For this reason, yields of dry matter should always be used instead of fresh weights in assessing forage maize yields. Differences in the dry matter/ moisture of the crop often result in fresh yields that are not correlated in any way with dry matter yield.

Starch Content: In the lead up to maturity, sugars in the plant move to the cob where they are converted to starch. Starch is an important indicator of the feeding value of the crop and is the main source of energy content in a well matured crop at harvest. Starch content is expressed as a percentage of the dry matter and is determined by wet chemistry. The average starch content of the control varieties on the 2022 DAFM Recommended List trials was 23.1%. Relative starch contents are used to show differences between varieties with the average of the control varieties set at 100. Varieties with a value in excess of 100 had higher starch content than the controls and varieties with a value less than 100 had lower starch content than the controls.

ME (MJ/kg): The ME system is used for differentiating maize varieties instead of the net energy system now commonly in use because the net energy system does not currently allow us to compare different maize varieties on their nutritional value. The ME value is an estimate of the energy available to an animal as a result of digestion of the feed material and is expressed in Megajoules per Kilogram.

Year first Recommended: The first year the variety was placed on the Recommended List.

Earliness of Maturity/Dry Matter Content: Dry matter is a good indicator of how much the crop has matured prior to harvest. The figures presented on the 2022 DAFM Recommended List are on a relative basis, with the average of the control varieties set at 100. Varieties with a value in excess of 100 have higher dry matter content that the controls and values less than 100 have lower dry matter content than the controls.

The relative dry matter has an associated text, called a maturity descriptor, which indicates the maturity of the variety. The range in relative dry matters for each maturity descriptor is shown in the table below:

Relative Dry Matter	**Maturity Descriptor**
≥108	Early
103-107	Early-Medium
98-102	Medium
93-97	Medium-Late
≤92	Late

The maturity descriptor can be used by maize growers as an aid in the selection of maize varieties suitable for their circumstances. There are large differences in the favourability of maize growing sites in Ireland, therefore selection of varieties suited to specific sites is an important decision when aiming to grow a good crop successfully.

A maize grower in a marginal site would generally be recommended to select an early maturing variety particularly if sowing late in the season. A maize grower in an excellent site would generally be recommended to select a late maturing variety particularly if sowing early in the season. Late maturing varieties are generally higher yielding than early maturing varieties. However, starch content is an important consideration which must also be taken into account and late maturing varieties should not be sown in marginal sites as this would result in crops not maturing and having a low starch content, particularly in poor maize growing years.

The following text is derived from “The Maize Guide” which was published in 2017 and was a collaborative industry led publication which further demonstrates the importance of appropriate variety selection for a given site.

The key factors when considering what variety to sow are:

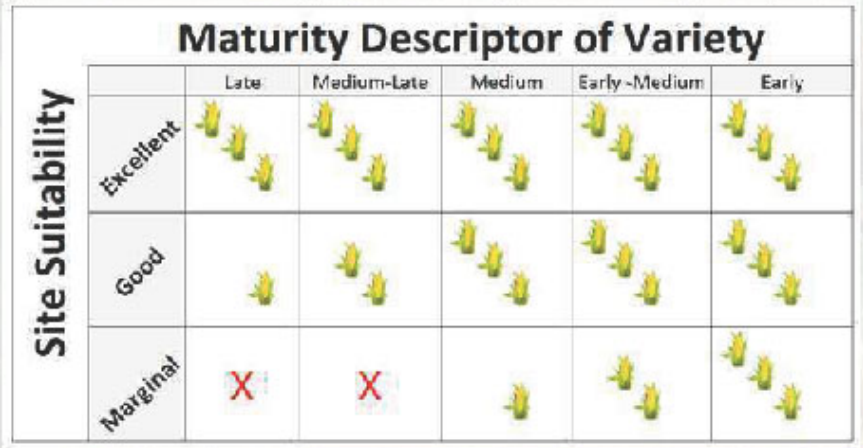
1. Site Location
2. Maturity Rating

Table 3. Site Location

Pick Your Site	Type of Site	Attributes of Site
	Excellent	- 0-50m above sea level
		- Free draining
		- South facing
		- Sheltered
	Good	- 50-75m above sea level
		- Good soil condition
		- Southerly aspect
		- Reasonable shelter
	Marginal	- 75-100m above sea level
		- Heavy ground
		- Late sowing/early harvest
		- Exposed site

Note: Your site should achieve 3 to 4 of the attributes for a site type

Figure 1: Selection of varieties appropriate to a site type based on variety maturity



= Very suitable

= Suitable

= Risk involved

X = Do not sow

Summary facts:

- *Look for a very suitable variety for your site*
- *Late maturing varieties shouldn't be sown late*
- *Late maturing varieties tend to produce higher yields*
- *Early maturing varieties tend to have lower yield but higher starch*

Recommended List of Covered Forage Maize Varieties 2022

Actual data is shown for the mean of the control varieties, and the relative data (as % of controls) is shown for all varieties with the exception of ME. The data is based on results of trials carried out in the period 2019 to 2021.

	Yield of Dry Matter (t/ha)	Starch content (%)	ME (MJ/kg)	Year first Recomm -ended	Dry Matter content (%) - Earliness of Maturity	
Controls*	**19.5**	**23.1**	**---**	**---**	**36.6**	
Ambition (R)	**87**	**118**	**11.2**	**2016**	**119**	**Early**
Konfluens (R)	**106**	**103**	**11.0**	**2019**	**100**	**Medium**
LG31235 (R)	**100**	**97**	**11.2**	**2019**	**97**	**Medium-Late**
P8200 (R)	**107**	**99**	**10.7**	**2017**	**96**	**Medium-Late**
P8201 (R)	**118**	**103**	**11.3**	**2018**	**99**	**Medium**
Spyci CS (R)	**94**	**107**	**11.1**	**2018**	**106**	**Early-Medium**
SY Feeditop (R)	**93**	**106**	**11.0**	**2017**	**105**	**Early-Medium**

This Recommended List details varieties that are suitable for covered forage maize systems and should not be used as a basis to select varieties suitable for growing in uncovered systems.

* The Control varieties were LG30211 & LG31235 in 2019, LG30211, LG31235, P8200 & Spyci CS in 2020 and LG31235, P8200 & Spyci CS in 2021.

(R): Recommended for general use. (PR): Provisionally Recommended (The number after the PR indicates the number of years provisionally recommended).

Characteristics of the varieties on the Recommended List of Forage Maize 2022

Ambition (R): This is the lowest yielding variety on the list. It has the highest starch content on the list. It has extremely high dry matter content and is an extremely early maturing variety. It is suitable for late sowing and/or early harvest particularly on marginal sites. Bred by Limagrain Verneuil Holding, France. Irl Agent: Goldcrop Ltd.

Konfluens (R): This is a high yielding variety with high starch content. Dry matter content is good and it is a medium maturing variety. Bred by KWS Saat, Germany. Irl Agent: DLF Seeds.

LG31235 (R): It is a good yielding variety with moderate starch content. Dry matter content is moderate and it is a medium to late maturing variety. Bred by Limagrain Verneuil Holding, France. Irl Agent: Goldcrop Ltd.

P8200 (R): It is a high yielding variety with good starch content. It has moderate dry matter content and is a medium to late maturing variety. Bred by Pioneer.

P8201 (R): This is the highest yielding variety on the list. It has high starch content. Dry matter content is good and it is a medium maturing variety. Bred by Pioneer.

Spyci CS (R): This is a moderate yielding variety with high starch content. Dry matter content is high and it is an early to medium maturing variety. Bred by Caussade Semences. Irl Agent: Goldcrop Ltd.

SY Feeditop (R): This is a moderate yielding variety with high starch content. It has high dry matter content and is an early to medium maturing variety. Bred by Syngenta. Irl Agent: Goldcrop Ltd.

Appendix 1: Varieties evaluated in the Covered Forage Maize National List/ Recommended List Trial 2021

	Variety Name/ Breeder's Reference	Trial Year '21	Agent	Breeder & Country	Breeder's Reference
1	Ambition	9	GC	Lim. Vern	LZM159/87
2	Capuceen	1	DLF	Lim. Vern	LZM169/35
3	DS1897B	1	P	Pioneer	CET162293
4	Emeleen	1	GC	Lim. Vern	LZM168/49
5	Isanto	2	Ger	Saat Linz	SL 2375
6	Konfluens	5	DLF	KWS Saat	KXB 3326
7	KXC 0313	1	DLF	KWS Saat	KXC 0313
8	KXC 0317	1	DLF	KWS Saat	KXC 0317
9	KXC 0337	1	DLF	KWS Saat	KXC 0337
10	LG31.207	2	GC	Lim. Vern	LZM167/39
11	LG31.217	1	GC	Lim. Vern	LZM168/47
12	LG31.224	2	GC	Lim. Vern	LZM368/75
13	LG31.235	6	GC	Lim. Vern	LZM263/77
14	P8200	8	P	Pioneer	X75B142
15	P8201	7	P	Pioneer	X80D062
16	P8255	1	P	Pioneer	X85P732
17	Primino	1	Ger	Saat Linz	SL 18239
18	Resolute	2	DLF	Lim. Vern	LZM167/84
19	Spyci CS	7	GC	Caussade	CSM 2152
20	SY Feeditop	8	GC	Syngenta	SB 0850

Trial Year '21 indicates number of years the variety has been in trial
Agent: GC = Goldcrop, DLF = DLF Seeds, P = Pioneer, Ger = Germinal

Breeder: 'Lim. Vern.' indicates 'Limagrain Verneuil Holding', 'Caussade' indicates 'Caussade Semences', 'KWS Saat' indicates 'KWS Saat AG', 'Saat Linz' indicates 'Saatbau Linz'.

Appendix 2

Recommended List (2015) of Forage Maize varieties suitable for growing without plastic cover (Uncovered)

Actual yield data is shown for the mean of the control varieties, and the relative yield data (as % of controls) is shown for all varieties. The data is based on results of trials carried out over three years in the period 2012 to 2014.

	Yield of Dry Matter (t/ha)	Dry Matter content (%)	Starch content (%)	ME (MJ/kg)	Plant Height (metres)	Year first Recom m -ended
Controls*	**15.5t/ha**	**35.4**	**23.3**	**---**	**---**	**---**
Activate (PR-1)	**96**	**120**	**117**	**11.31**	**1.96**	**2015**
Ambition (R)	**105**	**106**	**113**	**11.33**	**2.15**	**2014**
Atrium (R)	**101**	**90**	**105**	**11.12**	**2.01**	**2013**
Beacon (R)	**99**	**99**	**108**	**11.08**	**2.13**	**2012**
Beethoven (R)	**104**	**94**	**88**	**10.96**	**2.15**	**2010**
Kroft (R)	**92**	**113**	**121**	**11.08**	**1.97**	**2014**
Severus (PR-1)	**102**	**104**	**114**	**10.90**	**2.06**	**2015**

* The Control varieties were Beethoven, Beacon and Destiny in 2013 trials and Beethoven and Beacon in 2014 trials.

* Due to insufficient lodging occurring during the trial period 2012 to 2014, it was not possible to provide varietal lodging data.

(R): Recommended for general use. (PR): Provisionally Recommended (The number after the PR, indicates the number of years provisionally recommended).

Yield and quality data shown for Uncovered trials and Plastic covered trials are not directly comparable, because the trials were grown in different locations and under different conditions.

Characteristics of the varieties in Appendix 2 when grown without plastic cover.

Activate (PR-1): **Uncovered:** Fully Recommended variety in 2015. High relative yield and Dry Matter with very high starch content. An early maturing variety. Bred by Limagrain Verneuil Holding, France. Irl Agent: Goldcrop Ltd.

Ambition (R): **Uncovered:** Fully Recommended variety in 2015. High relative yield and Dry Matter with very high starch content. An early maturing variety. Bred by Limagrain Verneuil Holding, France. Irl Agent: Goldcrop Ltd.

Atrium (R): **Uncovered:** Good yielding variety. It has the lowest dry matter content on the list. High starch content. Late maturing variety. Bred by Limagrain Advanta Nederland BV, The Netherlands. Irl Agent: Seed Technology Ltd.

Beacon (R): **Uncovered:** Good yielding variety with good dry matter content. Very high starch content. Medium-early maturing variety. Bred by Limagrain Verneuil Holding, France, Irl Agent: Goldcrop Ltd.

Beethoven (R): **Uncovered:** High yielding variety. Moderate dry matter content. Low starch content. Medium-late maturing variety. Bred by Limagrain Verneuil Holding, France. Irl Agent: Seed Technology Ltd.

Kroft (R): **Uncovered:** Below average yielding variety. Very high Dry Matter and exceptional starch content, the highest on the Recommended List. A very early maturing variety and suitable for less favourable sites. Bred by KWS, Germany. Irl Agent: Seed Technology Ltd.

Severus (PR-1): **Uncovered:** First entered the list in 2015 with a provisional recommendation. Yield and dry matter are good and starch content is very high. An early maturing variety. Bred by KWS, Germany. Irl Agent: Seed Technology Ltd.

Appendix 3: Varieties evaluated in the Uncovered Forage Maize National List/ Recommended List Trial 2021

	Variety Name/ Breeder's Reference	Trial Year '21	Agent	Breeder & Country	Breeder's Reference
1	Ambition	6	GC	Lim. Vern	LZM159/87
2	Cardif	1	Ger	DSEP	DFI44724
3	Debalto	1	DLF	KWS Saat	KXB9004
4	Dignity	1	GC	Lim. Vern	LZM169/88
5	Echo	2	DLF	Lim. Vern	LZM168/83
6	Glory	4	GC	Lim. Vern	LZM160/85
7	KWS Exelon	2	DLF	KWS Saat	KXB 8007
8	KWS Pasco	1	DLF	KWS Saat	KXB 9010
9	KXB 9009	1	DLF	KWS Saat	KXB 9009
10	Minsk	1	Ger	DSEP	DFI46306
11	Oppido	2	NMB	Nordic M.B.	NMB-15235
12	Ortaca	1	Ger	DSEP	DFI46282
13	Prospect	2	DLF	Lim. Vern	LZM166/82
14	Resolute	2	DLF	Lim. Vern	LZM167/84
15	Saxon	1	GC	Lim. Vern	LZM168/89
16	Trooper	2	DLF	Lim. Vern	LZM 167/81
17	X75R460	1	P	Pioneer	X75R460

Agents: GC = Goldcrop, DLF = DLF Seeds and 'Ger' indicates 'Germinal Seeds'
Breeders: 'Lim. Vern.' indicates 'Limagrain Verneuil Holding', 'KWS Saat' indicates 'KWS Saat AG', 'Nordic M.B.' indicates 'Nordic Maize Breeding' and 'DSEP' indicates 'Delley Semences et Plantes'

RECOMMENDED LISTS

Cereal Varieties

Herbages Varieties: (Grasses and Clover)

Spring Bean Varieties

Winter Oilseed Rape Varieties

CROPS SCHEMES AND SERVICES

Seed Certification

Seed Testing

The use of certified seed ensures a high level of varietal purity and germination.

Recommended Lists can be obtained at the following link:

https://www.gov.ie/en/collection/68b24-crops/#crop-variety-evaluation

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