Forage Maize - Growing Conditions, Variety Choice & Management

This section provides a guide on how location and management factors are accounted for when choosing forage maize varieties.

Ontario Heat Units (OHU)

This is a standard system of assessing growing conditions by accumulating maximum and minimum air temperatures of above 10°C in the daytime and 5°C at night, from 1 May to 31 October.

Harvest year	OHU 1 May - 31 Oct	Trial sites
1997	2368	Dromore
1998	2250	Dromore and Comber
1999	2407	Dromore and Comber
2000	2256	Dromore and Comber
2001	2393	Gransha
2002	2100	Gransha
2003	2338	Gransha & Comber
2004	2385	Gransha & Comber
2005	2303	Gransha & Comber
2006	2632	Gransha & Comber
2007	2375	Gransha & Comber
2008	2289	Gransha & Comber
2009	2409	Gransha & Comber
2010	2497	Gransha & Comber
2011	2140	Gransha & Comber
2012	2111	Gransha & Comber
2013	2458	Gransha & Carrowdore
2014	2488	Gransha & Carrowdore
18yr Mean	2344	Average of 1997-2014

Varieties differ in the amount of heat energy they require to reach 30% DM, but around 2300-2400 OHU is normally required for an average-maturing variety grown in the open system. If plastic mulch is used, this requirement falls to around 2100 OHU, due to the heating effects of the plastic. These trial sites are broadly of 'average to good' for maize growing.

Key characteristics

Growing maize successfully in Northern Ireland involves selecting varieties with the correct balance between the ability to fully mature under conditions that are seldom ideal and yet not over sacrificing performance potential. Clearly, only varieties with sufficient stress tolerance are able to deliver good yield, quality and energy outputs

under these conditions, but the varieties that are least demanding of growing conditions are generally among the lower yielding varieties.

Finding the correctly balanced variety to meet each grower's needs, depends on how suitable the growing area is and how good are the specific fields to be used, on whether or not plastic cover is being used and whether starch content or total energy output is the more important factor.

General principles

- The dry matter content of the harvested crop should not be less than 25% as, below this level, effluent problems become an increasing risk. While it must always be realised that years can differ dramatically, if previous crops have failed to achieve this 25% target level, then earlier maturing varieties than before, should be selected.
- Conversely, maturing a crop beyond 35% dry matter and certainly over 40% is not advised, as there are
 no apparent animal performance benefits and utilisation and ensiling problems can occur. If previous
 crops have either become too dry or have had to be harvested too early in the autumn, and this
 pattern has been repeated for several years, then selecting a later maturing variety should provide
 higher yields from a crop that is still within the 25-35% DM range.

Specific requirements

- If plastic cover is being used this will advance the maturity of the crop and will allow later silking, higher yielding varieties to be used than would be possible if growing an open established crop. Therefore, the key characteristics for selecting varieties under plastic are their starch, ME and total dry matter yield potentials.
- If growing maize in open establishment, then the crop has no protection from the ambient conditions and unless in a very favourable growing area, dry matter content (DM%) ranking is an important characteristic as this identifies the risk of not getting a fully matured crop under restricted growing conditions, particularly if it proves to be a poor season.
- If high starch content is an important criterion for winter diets, then any variety compromises should be made in favour of earlier maturity and higher DM%, as this will represent less risk of getting a disappointing starch content if growing conditions are unseasonably poor.
- If high total energy (ME) content is an important criterion for winter diets, then any variety compromises should be made in favour of later maturity and higher total yield. The key limitation is ensuring that the variety chosen is still capable of achieving the 25% DM threshold within the constraints of the location and management system involved.

Expert guidance on variety decisions is available from local DARD offices. In general, the earliest maturing, lowest yielding varieties normally require the least energy and will be ready for harvest first. They may also tolerate poor growing seasons better, but will not have as high a yield potential as the later maturing varieties.