

VARIETAL CHOICE CRITICAL IN BIOGAS EQUATION

Will NIAB'S Descriptive List of Maize varieties for Biogas Producers really help arable producers venturing into maize production for the first time? Maize specialists Grainseed say it's a great start, but there's more to making the right variety decision than meets the eye.

Producers growing maize for AD plants must focus on the right combination of drymatter yield, energy content and maturity for their sites if they are to get the maximum return from the Biogas boom, says Grainseed's Wilson Hendry.

The area of maize grown as feedstocks for biogas production has grown significantly in 2013 increasing to 15,500ha which represents 10% of the current total UK crop. All indications show this continuing to rise.

But rapidly growing interest means many growers will be new to the crop and making the correct decisions regarding varietal selection will be one of the biggest challenges they face, he says.

"Maize is a lot more influenced by its growing environment than cereals and oilseed rape and it is very difficult to make broad-brush recommendations based on a given area without understanding the particular detail of the location.

"Once in the ground, the agronomy of the crop is much simpler than conventional arable crops and in truth, there are very few interventions that really affect the growth of the crop once it is established, so that initial varietal selection process is the most important management aspect there is.

"We know that maize produces more methane when it has a drymatter of at least 30%, so the trick is selecting varieties that can consistently achieve this at a specific geographical location, on the soil type you have and within the rotational restrictions of the field."

In the new NIAB list of maize varieties for anaerobic digestion in favourable growing conditions, only the two varieties Marco and Dualto top 60t/ha freshweight yield and, furthermore, they do so with drymatter contents around the critical 30% mark.

Marco achieves the highest outright yield of 63.0t/ha in the lists – some 5% above the second placed variety – together with the highest drymatter yield of any variety tested at 18.5t/ha.

For more difficult sites where achieving 30% dry matter is more challenging, Es Picker and Es Ardent are the earliest listed. These both give growers around 16t/ha DM yield – just 2.0t/ha behind Marco and Dualto – with DM contents over 35%.

The lists are based on a minimum of 3 years data gained from 9 locations throughout England but which of the two lists a grower should pay the most attention to is not always as easy as it seems, Wilson Hendry says.

“The key thing about maize is that it has to finish properly – where sugar in the leaf is converted to starch in the cobs - and this is largely dependent on the amount of heat units it has during its growing cycle.

“So, ideally, you want lots of yield, a drymatter content over 30% and high overall energy content. Historically, the ones that produce the highest yields are the later maturing varieties and the ones that produce less are earlier maturing.”

At first glance you might, therefore, choose a later variety for an ideal growing environment and an earlier one for less favourable conditions.

But, some areas of the South West can be very exposed with low heat units and some Northerly locations can actually have very favourable micro-climates for maize growing.

“Recent developments in breeding have produced a middle tier of maize types that although technically early varieties that mature fully in poorer conditions, also have very high yield potential that can be realised in both favourable and not so good locations.

“For example, in the list for favourable sites, the early maturing varieties Dominator and Ballade still produce over 54 t/ha freshweight and at 31-32% drymatter contents.”

The bottom line is that if you're new to maize you should really seek out specialist advice to discuss your particular growing conditions and don't make the mistake of going for too later variety in the pursuit of fresh yield alone, Wilson Hendry advises.

“The NIAB anaerobic digestion list is a real step forward for growers giving them genuinely independent data to allow them to make an informed choice regarding which variety to choose.

“In essence, a commercial digester is very similar to a cow's rumen, so the best varieties for livestock in terms of feeding qualities, are usually the best ones for digesters too.

“But achieving this maximum performance on any individual farm requires making an informed decision about the balance between yield, DM, energy, earliness and, of course, location.”

Grass weed control

One of the drivers pushing people towards thinking about maize in the rotation is the opportunity to carry out effective control of grass weeds, Wilson Hendry says.

The use of stale seedbeds, control of weeds using residual herbicides and spring cropping are all valuable opportunities for the control of resistant blackgrass in particular, he says.

“We are already seeing particular growth in maize for biogas units but there's also real interest from producers struggling to control resistant blackgrass following this year's wet winter.

“The grass weed herbicide used in maize crops, nicosulfuron (commonly called Samson), is a sulfonylurea and can be used to provide a different mode of action to some grass herbicides and many people are thinking of following this path.”

Value of maize for AD operators

With 112 operational AD plants and another 100 in the process of being built or in planning there is often an AD operator nearby who will be interested in buying forage to use as a feedstock. The question I am most commonly asked is “Whats it worth?” says Wilson.

In my opinion a fair price for all parties is based around the drymatter of the product delivered. So as a guide the grower could get paid £1 per % drymatter. If, therefore, he produces maize silage at 30% drymatter he gets paid £30/tonne fresh weight, whilst if its only 25% its £25/tonne.

There can be storage bonuses for clamping on the producing farm and higher rates if the AD producer has a higher influence on the crop, but be realistic what can be achieved and develop a good working relationship so that all parties benefit.