Our aim is to provide maize growers and associates with relevant information to enable them to produce maximum crop yields and excellent quality forage.

This guide is a companion to our varieties and will continue to be updated following the establishment of an extensive trials network across the UK and Europe.

Together with UK experts and our European breeders, SAATEN UNION and Caussade Semences, we have carefully selected material which is suitable for the UK market.

“We are looking forward to bringing improved material to the UK market. The trials and commercial testing we have carried out over recent years means we are very confident in our portfolio. The range will only grow and improve in the future.”

Heather Oldfield, Energy and Forage Manager, Elsoms Seeds

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Meet the Team

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Energy Maize

With its potential to produce very high energy yields at a low cost, maize has formed the backbone of the Energy Crop sector for many years.

- Using a combination of Energy Crops to balance the rotation improves security of raw material supply and creates a more efficient mix for use in the digester.
- Later (by UK standards) maturing maize varieties (FAO 220-260) can produce significantly higher available dry matter yields than earlier maturing (FAO 150-210) forage types.
- Farmers need to select varieties in terms of drilling time, geographical location and harvest window.
- All Elsoms maize varieties have been selected to suit the climatic conditions faced by UK growers.

The crop will germinate at soil temperatures of 8°C or greater and early development requires temperatures of 10°C or more.

- Late frosts can lead to plant death. If Autumn temperatures drop below 7°C, development can be significantly stunted.
- Maize for biogas is chopped to a short length which will help speed up the process within the digester. Maize has a long retention time of approximately 100 days.

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Table 1: Feedstock Comparison

<table>
<thead>
<tr>
<th>Crop</th>
<th>Fresh yield tonnes/ha</th>
<th>Dry matter %</th>
<th>Dry matter yields tonnes/ha</th>
<th>Biogas yields m³/tonne</th>
<th>Methane conversion %</th>
<th>Methane yield m³/tonne</th>
</tr>
</thead>
</table>

Table 1 illustrates the difference in methane yield. Each feedstock is not dissimilar in the amount of gas production, therefore variety choice is vital in achieving best performance. Different crops give different biomass yields per hectare - the same crop under altered conditions can give variable results.

Diagram 1: Suitability of Energy Crops throughout the UK

“Our success in the Hybrid rye market with varieties such as SU PERFORMER mean we have a good understanding of AD feedstock requirements. Together with the excellent knowledge and experience of our German colleagues at SAATEN UNION we can offer growers sound guidance in variety selection”

Jonathan Baxendale, Agricultural Seed Sales Specialist, Elsoms Seeds
Forage Maize

Elsoms, Caussades Semences and SAATEN UNION understand the need for quality, balance, yield and cost when deciding on the right maize variety.

With the 2015 price slump, the removal of all milk quotas and the volatility in beef prices, cost management is as important as ever. Despite the seasonality of supply and demand, stock still require a consistent feed. Therefore, finding a maize variety that performs well year on year is paramount.

Forage Maize

The three main areas that affect rumina productivity are feed sources, pH and cudding time. Our task is to feed the rumina, the rumina will then feed the cow.

Rumina are extremely sensitive to pH changes and pH values vary throughout the day. Silage generally has a pH value of 4 or less but the increased saliva production of a cow ruminating will lead to a higher value.

A regular, consistent and good quality feedstock will mean a balanced rumina, maximising nutrient yield.

The rate of fermentation depends on:

- Energy source: sugar ferments very quickly, fibre ferments very slowly.
- Processing type: ground cereal ferments quickly, soda treated grain (whole) ferments slowly.
- Dairy productivity: the rumina of a high yielding cow ferments sugar more quickly than a dry cow.

Maize falls under the starch category of energy sources. Typically, maize silage is high in energy if the correct variety and maturity is selected.

Maize is a palatable feed, but can often be low in protein. The high dry matter content leads to higher energy intake, combining this into a balanced ration, should improve daily performance and feed efficiency.

The high starchy and energy content mean that maize is an ideal feed for finishing cattle. The Elsoms team have first-hand experience of how successful maize can be when used as the sole forage source for finishing continental cross and dairy bulls and steers. Heifers and native types may require a mix with other lower metabolizable energy forages.

From Autumn and late Winter to early Spring, cows with calves at foot in early to mid lactation have a high nutritional demand, twice that of a dry cow. During this time, maize can be a useful energy source and can form a large part of the diet.

Maize silage is not suited to dry suckler cows on an ad libitum system because the energy content is too high. In this instance, it is better suited to a straw-based or mixed ration.

Maize Forage Potential

- Energy
  - 10kg DM x 10ME = 100 MJ energy
  - 12kg DM x 11ME = 132 MJ energy
  - 5.5 litres more milk potential
  - Or 2.5kg less concentrates
  - Healthier rumina
  - Less exposed to fluctuating feed market.

- 16t/acre crop of maize @ 32% DM and 32% starch = as much starch as 2.75t of wheat PLUS energy from the leaf and stem.

- An extra 1kg DMI of 10-12p will replace energy from 1kg FW of sugar beet pulp = 16p/head/day.

- High forage intakes are generally conducive to good rumina health.

- Protection from volatile market conditions.

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<table>
<thead>
<tr>
<th>Feed Type Comparison</th>
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</thead>
<tbody>
<tr>
<td>Feed type</td>
</tr>
<tr>
<td>Maize silage</td>
</tr>
<tr>
<td>Grass silage - first cut</td>
</tr>
<tr>
<td>Fermented wholecrop cereals</td>
</tr>
</tbody>
</table>

*Source: AHDB Technical December 2015. Feeding Maize Silage

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Table 2: Feed Type Comparison

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“The SAATEN UNION range of maize from Elsoms has been revived and has brought new flexibility to the crowded market place. The new SURIGA tops the group 8’s with DM yield and impressive cob formation.”

Craig Green, Agronomist and Seed Sales Coordinator, Agrovista

**Early**

Early, suits cooler conditions or lower heat unit sites.

Allows for delayed drilling on heavier land sites. May not be suitable for lighter land, sandy soils or high heat unit regions*.

Early varieties tend to have a high starch content up to 50% maize silage, therefore ideal for a total mixed ration and for finishing beef cattle. This range have high energy density ME / KG.

However due to the earliness, yield potential can sometimes be relative, compared to later varieties on stronger land types.

*The prompt harvesting means a more manageable workload, and the crop is available ready for winter.

**TEKNI CS**

An early variety with good standing ability. Reliable disease resistance. The economical alternative. FAO 180.

**EURYTMIC CS**

Very high dry matter variety. Superb performance in independent trials and on farm. FAO 200.

**SURIGA**


### Eurytmi CS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Vigour (out of 9)</td>
<td>6V</td>
</tr>
<tr>
<td>Lodging Resistance</td>
<td>7</td>
</tr>
<tr>
<td>Stay-Green</td>
<td>6</td>
</tr>
<tr>
<td>DM (%)</td>
<td>31.3</td>
</tr>
<tr>
<td>Relative Yield (%)</td>
<td>105.8*</td>
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</table>

*Source: Caussade Semences Development Data 2004

### Tekni CS

<table>
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<th>Score</th>
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<tbody>
<tr>
<td>Early Vigour (out of 9)</td>
<td>7</td>
</tr>
<tr>
<td>Lodging Resistance</td>
<td>8</td>
</tr>
<tr>
<td>Stay-Green</td>
<td>7</td>
</tr>
<tr>
<td>DM (%)</td>
<td>32.1</td>
</tr>
<tr>
<td>Relative Yield (%)</td>
<td>107*</td>
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*Source: Caussade Semences Development Data 2004

### SuriGA

<table>
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<th>Score</th>
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<tbody>
<tr>
<td>Early Vigour (out of 9)</td>
<td>7</td>
</tr>
<tr>
<td>Lodging Resistance</td>
<td>5</td>
</tr>
<tr>
<td>Stay-Green</td>
<td>6</td>
</tr>
<tr>
<td>DM (%)</td>
<td>31.7</td>
</tr>
<tr>
<td>Relative Yield (%)</td>
<td>102.6</td>
</tr>
</tbody>
</table>

Source: NIAB Pre DL Trials 2013 & 2014 SAATEN UNION Trialling Data

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Medium

Medium; suitable for all mainstream sites.
These varieties require moderate to high heat units. Due to starch content, the total mixed ration can be up to 70% maize silage. This does offer the grower the opportunity to crimp grain as a source of by-pass starch.
Harvest window is increased by the slower dry down of this range. The earlier varieties in this range are dual purpose, livestock and biogas.

**SULANO**
A very vigorous dual purpose variety. Excellent high DM yield. Good early vigour. High starch content. **FAO 220.**

| Early Vigour (out of 9) | 8 |
| Lodging Resistance | 6 |
| Stay-Green | 7 |
| DM (%) | 30 |
| Relative Yield (%) | 106 |

**SUMATRA**
Very high dry matter variety. Superb performance in independent trials and on farm. **FAO 220.**

| Early Vigour (out of 9) | 7 |
| Lodging Resistance | 7 |
| Stay-Green | 8 |
| DM (%) | 31 |
| Relative Yield (%) | 98 |

Source: Nordic Seed Trials 2016 SAATEN UNION Trialling Data

**SUSETTA**
A very vigorous dual purpose variety. Excellent high DM yield. Good early vigour. High starch content. **FAO 230.**

| Early Vigour (out of 9) | 6 |
| Lodging Resistance | 6 |
| Stay-Green | 8 |
| DM (%) | 32 |
| Relative Yield (%) | 106 |

*Source: SAATEN UNION Trialling Data to date*

Late

Late / Energy Maize; offers the mainstream sites the opportunity to maximise energy yield per hectare.

Yield can be exploited further by the manipulation of drilling date and seed rate. This optimises the growing costs per tonne. High stay green factor means a prolonged harvest window, and easier chop length control and storage management.
Higher cellulose content leads to a longer retention time in the Anaerobic Digestor.

**SULANO**

**SUMATRA**

**SUSETTA**

“The Elsoms SU range of maize has a strong portfolio for good standing ability, sizeable cobs, and good eyespot scores leading to group topping yields in the Great Ellingham trials 2016. SURIGA and SUSETTA were the two varieties which stood out for me in the trials. Strong stable plants with large full cobs.”

Craig Green, Agronomist and Seed Sales Coordinator, Agrovista