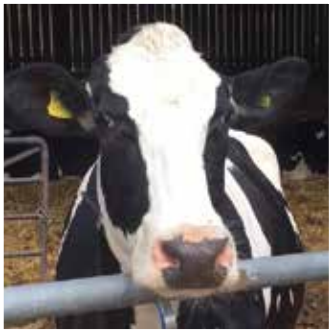
MAIZE GROWERS GUIDE



BRIGHT MAIZE

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Welcome

To offer the very best to our farmers, and still working alongside Bright Seeds, we have introduced Bright Maize, a new opportunity to focus entirely on Maize.

The agricultural world is evolving at an incredible speed. Faced with such a transformation, we aim to unite with farmers more than ever before to support them with high quality seeds and expert support and services.

We work very closely with our seed breeding partners to ensure, not only, that we are supplying the best varieties suited to your farm, but also that we are buying as sharply as we can and implementing the best supply chain.

In the near future we will be making use of modern technology by introducing further services for farmers to access, this will no doubt bring added value to Bright Maize by offering these resources to our customers.

We have a super team of Advisors around the country ready to help when you need it, so please call into the office so we can put you in touch with your nearest member. Our intention is to give you as much information as you require so you can make your own informed choice with confidence.

Laura Drury
Commercial Manager

Rod Crossley
Senior Advisor

SILAGE MAIZE

Why use hybrids?

Maize is an excellent basic winter forage used as a complement to grass silage, it is an essential part of dairy cows feed all year round. It is richer than hay, easier to conserve than grass silage, and quickly convinces the farmers who try it.

Forage maize is grown like grain maize only the harvesting stage and method change. For forage maize the whole plant is harvested, chopped and used for silage. Harvesting takes place when the plant is around 32% dry matter. It is a good compromise between yield, conservation and feed value. Silage maize is easy to conserve, the fermentation process is fast and efficient. Once stabilised, the silage can be kept for 12 to 18 months.

Silage maize can be given to animals in two forms:

Whole plant

It is rich in starch and has a high and stable energy value, around 0.91 UFL (milk feed unit) and 0.81 UFV (meat feed unit) per kg of DM.

A good ration consists of 70 – 75% forage maize and contains 22 to 28% starch for milking cows and 10 points more for fattening cattle. In the ration the forage maize is always associated with other feeds, mineral and nitrogen additives enable the production targets to be reached.

Grain harvested

Grain harvested wet (28 – 35% MC) has long been used for pig feed, and is also suitable for dairy cow rations or for fattening cattle. Its ease of use, high nutritional value and drying savings make crimped maize an ideal feed choice for cattle and pigs.

IMPORTANT FACTORS AFFECTING MAIZE YIELD

Influences on consistent maize growth

- Fertiliser: 10%
- Weed Control: 10%
- Variety: 10%
- Harvest: 10%
- Soil Structure & Drilling: **55%**

Maize is a short-cycle plant. Emergence and rooting problems are very difficult to overcome. From germination to the 4-leaf stage, the maize limiting factors are cold, excess water and pests (wireworms, slugs, cutworms, etc.). They can have a significant effect on population and yield.

What makes good sowing?

A regular sowing depth

- Plant the seeds at the same depth, 4 cm, in cool soil
- Seed beds with fine soil - be careful of the risk of capping in silty soil
- Some small surface clods
- A good moisture level around the seed

A seed drill in very good condition

- Tyre pressures: 2 kg/cm^2
- Coulters in very good condition for a V furrow
- Good pickup of sowing elements
- Adequate coulter pressure and clod clearer setting

Controlled distribution of seeds on the line

- Verified and controlled density: adjust the sowing rate to adapt it to each field. Take into account each field's yield potential
- No doubles or misses

For good sowing

- Regularly check the settings and distribution
- Respect the sowing densities and depths adapted to the soil
- Sowing speed between 7–10 km/h

Two advantages of early planting

The best yields are regularly to be obtained with early planting.
Anticipate manuring and working the soil to be ready for mid April.

Early crops also have the advantage of dryer harvesting and therefore bring savings in drying.
But planting too early can also reduce yields.

The maize germinates and develops when the soil temperature reaches 10°C.
At lower temperatures the seed remains dormant and will become more vulnerable to disease, insects and animal predators. It is therefore recommended to take the soil temperature everyday for a week.

FERTILISER

Nutrient Requirements

- 180kg/Ha potash
  80kg/Ha phosphate
  150kg/Ha nitrogen
- 25t/Ha application fym
  212kg potash
  47kg phosphate
  150kg nitrogen (not all available in first year)
- 35% of N required after tasselling

Seedbed fertiliser

- Is it beneficial?
- Some N and P close to the seed can be important for good establishment
- Any blend of N:P:K will do the job

WEED CONTROL

Pre-Em Herbicides

- Should we apply?
- Applying will buy yourself time
- At the very least they will sensitise weeds
- Sometimes a follow up spray is not needed

Post-Em

- Apply before weeds become competitive
- Many different products available
- Some just do BLW
- Others grass weeds
- Wide choice of tank mixes

SOIL STRUCTURE AND DRILLING

Seedbeds

- Deep loose seedbed
- No need to overwork; maize is a large seed
- Seedbeds can slump or cap if overworked

Drilling

- Maize does not react well to competition
- Needs even spacing, 13cm spacing @75cm row (100k/ha)
- Good seed selection (very few doubles or misses)
- No unit bounce – 10kph optimum speed
- Direction of drilling can be important- N/S ideally

Rolling

- Never say never
- Dry cloddy seedbed can be beneficial
- Roll across rows if in doubt
- Make sure soil is not wet underneath- as it can compact

Sub- soiling

- This is best done in the Autumn if possible

Seed Numbers

- Bag size 50,000 seeds = 0.5Ha
- Ideal seed rate is 100k-110k/Ha
- Reduce to 93k/Ha for late sowing or grain maize
- In acres, 38-44.5k/acre

VARIETY GROUP CHOICE

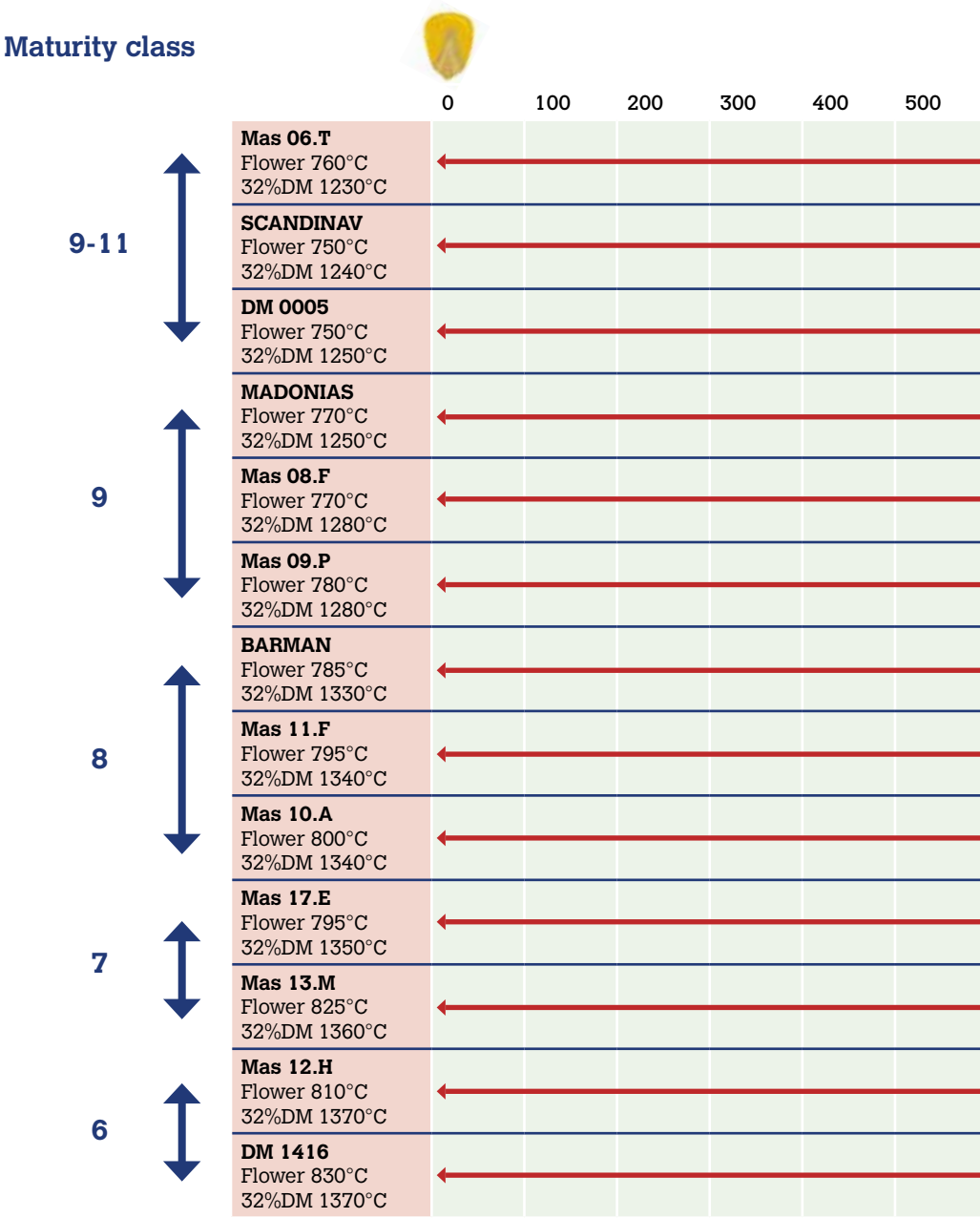
Varieties are often put into maturity groups with the most useful in group 12-6

Joy	12
Scandinav	10
Mas 06T	10
Mas 09P	9
Arcade	9
Madonias	9
Mas 08F	8
Belami	8
Mas 10A	8
Mas 11F	8
Barman	8
Mas 17E	8
Mas 12H	7
Mas 13M	7
Mas 20S	6
Mas 28A	5

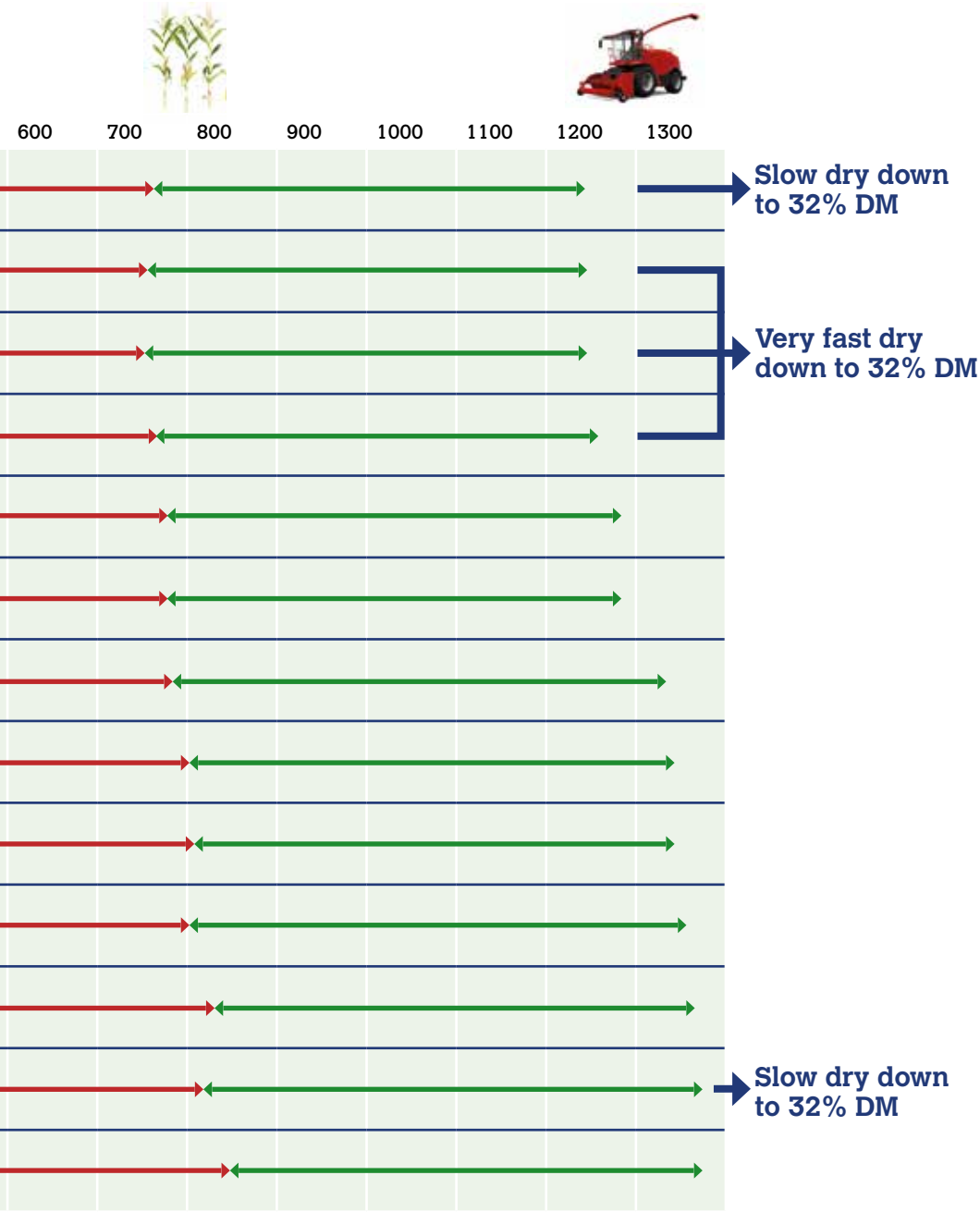
BRIGHT MAIZE

- Height above sea level very important
- Soil type also a big factor
- Group choice depends on desired drilling/harvest date
- Lighter soils dry out and warm up quicker
- Heavy soils tend to need earlier harvest
- Use different variety groups to manipulate harvest date
- Early varieties suit high ground, later varieties more suited to low ground
- These factors can also be combined with sowing date
- Location most significant
- Maize growth is governed by accumulated temperature

TEMPERATURE NEEDS TO



FLOWERING & HARVEST



KEY STAGES OF MAIZE

Emergence
- 10C soil temperature required for germination
- 12–17 days required to reach emergence

4-5 leaf stage
- Weaning – the plant is no longer dependant on the seeds reserves
- Sensitivity to deficiencies

8-10 leaf stage
- Initiation of ears – (number of rows)
- Need for water and nutrients
- Sensitivity to cold, low sunlight and application of weed killers

Tassel visible
- Stage of which determines number of ears per plant
- Number of ovules is 90% determined
- Great sensitivity to lack of water and nitrogen

Silking
- Fertilization of ovules by the pollen
- Sensitivity to lack of water

Grain abortion limit stage – 3 weeks after fertilization
- Final number of grains
- End of maximum sensitivity to water stress

32%-34% DM
- Grain mature/end of grain fill
- Formation of black layer
- Closing of vessels between grains and cob

MAIZE SILAGE VARIETIES WITH HIGH STAY GREEN

3 reasons to choose maize silage varieties with High Stay Green:

More flexibility to harvest at the right stage

With High Stay Green the variety remains green up until the silage harvest stage.

The slower DM evolution at silage stage allows a larger flexibility for silage harvest between 32% and 35% of dry matter, even if the maize is grown in dry conditions.

Depending on weather conditions, the harvest window can be extended for 5 to 10 days.

A better conservation of the clamp

Clamps are easier to pack with High Stay Green silage. As leaves are still alive, breathing is more intense. Within a few hours, oxygen is removed, and the anaerobic fermentation begins. Usually the same process takes 3 to 6 days. During this time bacteria and yeasts can degrade the quality of the silage and its feed value. Moreover, High Stay Green varieties have a higher level of soluble sugars available which impact on the development of lactic acid at the first stage of fermentation.

High stay green varieties have a direct impact in maintaining the maximum quality and feed value of the clamp.

An energetic and more digestible basic diet

A variety harvested at the right stage, 32-35% DM, provides a feed that is rich in starch coming from grains and in digestible fibre coming from the leaves and stem. Compared to a non-stay green variety, a High Stay Green variety has a slower evolution of starch migration in grains, and also behaves better in drought conditions.

Starch from High Stay Green varieties are softer (less rich in prolamine) therefore more digestible in the rumen of the cow.

HARVESTING

The best stage to harvest silage maize is between 32 and 35% dry matter.

The grain itself needs to be dry.

It is a compromise between yield, plant composition, ease of silage production, silage conservation ability and desired intake level by the animal.

The poorest part of the crop is the lower stem; stubble height can be manipulated.

At harvest

- Survey grain maturity and water content as harvest time approaches (ideal: 32 -35% dry matter)
- Harvest when there is still some green material in the leaves irrespective of cob maturity
- Clean harvesting equipment and storage location
- Adjust chopping length to suit end use – short for AD – longer for cattle
- Fill clamp rapidly (limit the aerobic phase) but make sure that the silage arrives at the clamp at a workable rate

- If weed control is a problem, raise the cut to limit contamination
- Lay silage sheets along the walls to prevent entry of water and air

At storage

- Ensure that there is a rapid and stable fermentation (no air entry): good sealing and good **consolidation**
- For difficult consolidation(over 35 % dry matter), take the time to **consolidate** (particularly at the edges) and sufficiently fill the clamp
- For good consolidation on very high DM consider a shorter chop length and **overinflate the tractor wheels**
- Avoid wide tyres and low pressures
- Avoid incorporating earth or dust into the forage, which favours the development of butyric spores

When the clamp is opened

- Adapt the width of the front opening to be able to get across the face in less than a week
- Do not give visibly mouldy silage to cattle

MAIZE SILAGE ANALYSIS

From one year to the next, maize silage is completely different because the growing conditions are different.

To better adjust the ration of the animals, a sample should be taken at harvesting to analyse the silage quality. These analysis sheets give the chemical composition of silage maize and the calculated criteria, to assess the quality of the maize to be harvested and give the farmer an indication of the ration to be given to his animals.

Criteria	Gives an indication of	Lower values	Target	Higher values
% Dry matter	▪ Harvest storage stage ▪ Conservation ▪ Intake	Intake adversely affected	30 - 37%	Conservation more difficult
% Crude fibre	▪ Ear/plant ratio ▪ Ruminal fermentation stability ▪ Energy value (-)	Digestibility improved but risk of acidosis	18 - 21%	Digestibility adversely affected
Mineral matter	▪ Pollution by earth ▪ Butyric risk	Vigilance for mineral additives	3 - 4%	Probable contamination by the soil, beware of butyric risk
% Starch	▪ Intake palatability ▪ Energy value (+) ▪ Risk of acidosis	Due to bad growing conditions early harvest	27 - 35%	Risk of acidosis
Cell wall digestibility	▪ Digestibility of the nonstarch part	Digestibility and bulk adversely affected	50 - 54	Increased digestibility
Total nitrogenous matter %	▪ Energy value (PDI) ▪ Digestibility	PDIN value low, complemented with other sources of proteins	7 - 7.5%	High PDIN value
Digestibility of organic matter	▪ Digestibility of whole plant ▪ Energy value	Energy value suffers	70 - 72%	Energy value increased
Milk forage unit/kg	▪ Energy value of whole plant	Energy value low, find sugar-rich concentrates to complement the ration	0.88 - 0.92%	Energy value high to very high. Above 0.98, be careful of the complements

COMMON PESTS AND DISEASES

Common Smut

Head Smut

Eye Spot

European Corn Borer

Helminthosporium Turcicum

Wireworm

For advice on how to control and eliminate these issues please contact the office.


Knowledge speaks...
wisdom listens
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