

## **BORAGE GROWERS GUIDE**

### **Some of your questions answered about Borage**

#### **What is Borage?**

Borage (*Borago officinalis*) is an annual plant sown in the spring. It grows to a height of approximately 1-1.2m (3-4') and is extremely competitive against weeds. The seed of borage is similar in size to wheat, is black in colour and the oil within it contains the highest natural source of Gamma Linolenic Acid (GLA) so far discovered.

#### **What is GLA used for?**

GLA is a naturally occurring fatty acid, essential for human health. Borage oil capsules are sold over the counter in chemist and health food shops as dietary supplements and are also marketed under the name of Starflower capsules.

Scientific evidence has confirmed GLA's use in the treatment of a wide range of conditions. For example, GLA appears to help multiple sclerosis sufferers by extending the periods between remissions while lessening the severity of the attacks. It also helps alleviate pre-menstrual tension, helps with eczema and can reduce the level of cholesterol in the bloodstream. Work is also being carried out on its effect on Alzheimer's disease, cancer of the pancreas, asthma and childhood hyperactivity.

Borage oil is also ideal as an addition to cosmetic creams, lotions and oils where it is an effective skin treatment.

#### **UK Production Largest in the World**

Fairking have successfully grown Borage in the UK for almost 30 years and have built up a wealth of agronomic experience. Crops are grown throughout England as far north as the Humber. UK production is by far the most important area in the world.

#### **Benefits of Growing Borage**

- Very high gross margins.
- Unrelated to other species grown in the arable rotation therefore providing a true break crop on the farm.
- Very low input crop – minimal pesticide and fertiliser use.
- Excellent for blackgrass control.
- Excellent entry for winter wheat.
- Minimal storage requirement (100 acres will produce approximately 16.5 tonnes)
- Very few pest and disease problems.
- Can be late sown in Spring, even up until the end of May if desired.
- Guaranteed buy-back contract.
- Friendly advice from experienced growers
- Rabbit and Pigeon resistant.
- Attractive to bees, producing excellent honey.

## **Points to Remember**

- The availability of a swather is essential as is the use of a draper pick-up.
- Volunteer borage is likely to be present in future crops and control measures should be planned.
- Borage will not perform at its best on very light soils.
- Bee keepers should be encouraged to place hives in crop.
- Attention to the timing of swathing is essential to ensure optimum yields are achieved.

## **HUSBANDRY GUIDELINES**

### **BACKGROUND**

Borage (*Borago officinalis* L) is considered indigenous to Britain, having grown wild and been cultivated for many hundreds of years. It is a very fast growing aggressive annual, exhibiting good weed suppression when the plant density is high. The most serious problem is seed drop at maturity, when the closest crop management is required. We will be happy to advise during this critical period, but there is no avoiding the issue that continuous attention to the crop by the grower is the most important requirement at this particular time.

### **AGRONOMY DETAILS**

#### **Soils**

Borage will thrive on all soil types except extremely acid soils and drought prone soils.

#### **Rotation**

In order to reduce the effects of volunteers it is recommended that fields are selected that can be reserved for borage in the future. Many growers alternate their borage with winter wheat (borage, winter wheat, borage etc.) and find this a successful rotation. Borage can be difficult to control in Beans.

#### **Area to be Grown**

A minimum of 8 hectares should be grown. However, in our experience better results are often achieved by new growers if an area of 12 hectares or more is considered. The reason being that if a smaller hectareage is grown, it is possible that less care will be taken to grow the crop (as it represents only a small part of the total farm acreage).

In addition, as a swather is required, the grower should check with his contractor **before** sowing the crop that his acreage is large enough to ensure the contractor will cut the crop at the optimum time.

#### **Seedbed**

Prepare a firm fine, level seedbed but take care to avoid compaction.

## **Sowing**

Avoid sowing until soil temperature has reached 10°C, and the soil conditions are good. Borage sown in early May in good conditions often out yields earlier sown crops, but mid-April is ideal.

Sowing Depth 1" to 2" (3-6cm)

Row Width – crops have been successfully grown on row widths from 4½" to 18" (12-45cm). Narrow rows are generally preferred.

Seed Rate 12-18kgs per hectare depending on germination. We will advise.

## **Fertiliser**

Providing P&K soil indices are 2 or better, there will be no yield benefit from adding phosphate or potash.

On normal mineral soils approximately 75kgs N/hectare should be applied at drilling or early post-emergence. Liquid nitrogen will scorch an emerged crop.

## **Weed Control**

Once established Borage is very competitive and chemical weed control is not always necessary. Where broad leaved weed control is required Butisan™ (metazachlor) can be used at up to 1½ litres per hectare. For best results this should be applied pre-emergence of any weeds. For grass weeds Laser or Aramo may be used.

## **Pests**

Borage has few pests. In the unlikely event of flea beetle damage, Hallmark™ is approved. In some seasons Painted Lady Butterfly caterpillars attack areas of the crop. Control by Hallmark™ is rarely justified.

## **Diseases**

Mildew is a threat. Most growers apply elemental sulphur, which acts as a protectant, at least once from late stem extension onwards. But Folicur is a protectant option at this stage. Sclerotinia will also attack Borage and in medium to high risk situations Filan can assist in its prevention.

## **Pollination**

Bumble Bees are the best pollinators but placing hives of honey bees close to the fields of Borage improves pollination. 2 hives per hectare are recommended.

## **Harvesting**

Borage sheds its seeds very rapidly as they mature and swathing is essential. The timing of swathing has a huge effect on yield and there is no perfect formula. The optimum is normally 7-10 days after the first black seeds can be found on the ground. Hot weather shortens this period and dull cool weather extends it so it is essential to monitor the crops daily and try to choose the time when the most black seeds have formed but not dropped. When swathing cut the crop as low as possible, the tighter the swath, the less the seed loss.

## **Combining**

A pick-up header is essential. Threshing is not difficult, the problems come in the separation area. As a rough guide, set the wind as for oilseed rape and the bottom sieve almost closed. Optimum combine settings vary with conditions. Remember you are only harvesting around 400 kg/ha compared to 10mt of wheat!

## **Drying**

Borage needs to be dried to 9%. If harvested wet and drying is delayed the seed deteriorates very quickly so it is essential to get some air blowing through it as soon as possible. The cleaner the sample, the easier it is to dry.

Floor drying systems with gas fired humidity control works very well. Do not store deeper than about 4 feet unless stirrers are available.

Direct fired diesel driers are not regarded as suitable because the exhaust fumes contain hydrocarbons which damage the borage oil. This can lead to rejection under the contract terms.

## **Storage**

Borage seed in store should be regularly monitored. The seed is slightly hygroscopic which can lead to problems. Take care – this seed is valuable.

## **Disclaimer**

All pesticides suggested for use in a crop of Borage are used under the current Extension of Authorisation for Minor Use (EAMU....Formerly SOLA's)  
EAMU's will not be given on the product label provided by the pesticide manufacturer. It is essential that you receive further advice from your agronomist in respect of the crop and the situation in which it is to be recommended. Such an extension of use is at all times done at the users choosing and the commercial risk is entirely theirs. Advice given within this document is intended to help with the production of Borage and cannot be used as a recommendation.