

## Cut Flower Chrysanthemum Production Workshop – October 14<sup>th</sup> 2014

### Cut Flower Chrysanthemum Variety Selection

A wide range of Chrysanthemum varieties are available for cut flower production, with new varieties appearing each year. Growers can choose between 'spray' or 'bloom' (disbud) varieties. The majority of cut flower Chrysanthemums produced in Northern Ireland are 'bloom' varieties - one flower on a single stem. Natural season Chrysanthemums flower when day length shortens while breeders have also developed All Year Round (AYR) varieties. Cut flower growers can choose from a wide selection of varieties including – Allouise, Creamist, Eleonora, Samara, Shoemsmith and Tom Pearce.



Image 1. Varieties for cut flower Chrysanthemums (L-R) Inga White, unnamed green variety, Allouise Orange.

### Crop Scheduling

Propagation material for cut flower production is supplied as rooted or unrooted cuttings. These are available May - June from UK & Dutch suppliers. If unrooted cuttings are purchased allow 2-3 weeks extra in the production schedule before these are ready to plant. Using various varieties and planting dates Chrysanthemums are produced for peak sales from October-December.



Image 2. Upon delivery rooted cuttings are removed from plastic bags and placed into plug trays.

## Planting Preparation & Density

In Northern Ireland cut flower Chrysanthemums are normally soil grown in glasshouses or polytunnels. Prepare a planting bed approximately 1.1m-1.15m wide using a rotovator and rake off large clods & weeds. Allow 40-45cm for paths between beds.

1. Install trickle tape for irrigation & liquid feeding. Lay 4 equally spaced lines of trickle tape on the soil surface.
2. If using plastic mulch for weed control lay the perforated plastic film over the trickle tape.
3. Lay 1 or 2 layers of wire netting (12.5cmx12.5cm) which will be required to support this relatively tall crop.
4. Planting densities for bloom varieties depends on the number of stems produced: 64 plants per m<sup>2</sup> (single stems), 32 per m<sup>2</sup> for 2 stems & 25 per m<sup>2</sup> for 3 stemmed plants.
5. Once established pinch growing tip to produce 2–3 stems per plant.



**Image 3.** Bed of bloom Chrysanthemums.

## Integrated Pest Management

Good hygiene standards are essential to prevent weeds, pests and diseases infecting the crop. One method of prevention is to remove weeds in the vicinity of the greenhouse especially groundsel which can be used as a host plant for both pests & diseases. One of the most common and significant pests in Chrysanthemum crops are aphids. Whilst aphids & thrips can cause damage to the growing tips of the plants it is the viral infection carried by them that can cause significant damage. It is important to continuously monitor the crop especially in the growing points. A magnifying glass is useful to see these small insects. At Greenmount Campus biological controls for aphids, thrips & leaf miner were used for a significant part of the Chrysanthemum production period however chemical insecticides were used for pest outbreaks. A fungicide spray programme, sticky traps and crop rotation can reduce the occurrence of Chrysanthemum crop pests and diseases.

## Major Pests & Diseases of Chrysanthemum crops

Pests	Diseases
Aphids	Botrytis
Caterpillars	Chrysanthemum White Rust
Leaf miner	Fusarium wilt
Slugs	Leaf spot
Spider Mites	Root rot
Western Flower Thrips	Virus



**Image 4.** Caterpillar damage



**Image 5.** Leaves distorted & discoloured by virus.



**Image 6.** Brown stem rot & tip wilt caused by Fusarium.



**Image 7.** Red colouring inside stem indicating Fusarium.

Application	Product Name	Pest Name	Application Timing	Comments
1.	Signum (boscalid + pyraclostrobin)	Botrytis White Rust	Week 31. As a systemic & protectant.	1 of 2. Maximum 2 treatments per year.
2.	Serenade	Botrytis Powdery mildew Rhizotonia	Week 33. As a preventative.	Good coverage required on foliage.
3.	Royal WG (iprodione)	Alternaria Botrytis Sclerotinia	Week 35. As a protectant.	
4.	Bumper 250 EC (propiconazole)	White Rust	Week 37. As a systemic & protectant.	When high humidity is forecast – Sept. Heavy rates can cause crop stunting. Avoid rotovating crop debris into ground.
5.	Signum (boscalid + pyraclostrobin)	White Rust Botrytis	Week 39. As a systemic & protectant.	2 of 2. Maximum 2 treatments per year.

**Example of Fungicide Spray Programme for Chrysanthemums**



## **Nutrition & Growing Temperature**

As cut flower Chrysanthemums are greenhouse grown it is advisable prior to planting to check soil nutrient and salt content. As greenhouse soils are used intensively and not subject to natural leaching from rainfall, salt from fertilisers can build up and become toxic to plants (above index 3). This can be characterised by poor crop development and spindly or twisting stems. In most soils a pH of 6.5 to 6.8 is considered ideal for nutrient uptake in Chrysanthemums. At Greenmount Campus a liquid fertiliser of 3:1:6 applied weekly was suffice for this crop. Additional potassium (K) and Magnesium (Mg) can be used to promote stem strength. Controlling humidity is especially important closer to harvesting as weather cools and moisture rises. Heating can be used to reduce humidity and prevent fungal infections on flowers in bloom but this will depend on local microclimate. Temperatures below 5C could cause plant damage.

## **Plant Growth Regulators (PRGs) for 'Neck' Development**

Plant growth regulators can be used to produce shorter and stronger stems especially below the flower bud (neck). This prevents the 'neck' stems becoming elongated and unable to support heavy flowers. Many Chrysanthemum growers use the chemical Daminozide (trade names Alar, B Nine or Dazide Enhance). Timing of application is recommended prior to and during flower initiation - mid August to early September. The number of applications varies depending on variety response and dose rate with 2 to 3 commonly applied. Note that plant growth regulators should be applied to the top 15-20cm of the stem. Do not wet the foliage for 24 hours after spraying. It is advisable to trial a small area of the crop and monitor as variety responses can differ. First application is normally when the crop is approximately 30-50cm tall.

## **Disbudding Technique**

This is a simple technique to remove side shoots to produce bloom Chrysanthemums (one flower per stem). Disbudding involves manually pinching out soft shoots or buds before they become too large. If disbudding is not performed then the stem will produce several small flowers instead of a single large flower. Disbudding is performed several times over the crop growing period and may be required to remove unwanted flower buds on terminal stems.

## **Harvesting & Marketing**

Flowers are harvested when outer petals have opened past the horizontal and the centre petals are beginning to loosen. The flower is approximately one third its fully open size. The introduction of new colours has seen interest renewed in this familiar cut flower. Seasonal colours of red, oranges and yellows are traditional for autumn markets with purple becoming more popular. Cuttings can vary in price from 20p-40p each (excluding VAT & delivery) depending on variety, rooted/unrooted and quantity ordered. Wholesale market prices can vary depending on availability of imports & variety but typical wholesale prices for bloom Chrysanthemums are 50p-150p per stem. Normally sold in bunches of 5 or 10 stems at 70cm to 75cm long.

## **Sources of Information**

ADAS 1988, *Natural Season Chrysanthemums (Protected)*, Ministry of Agriculture Fisheries & Food.

DEFRA 2014, Latest Wholesale Fruit & Vegetable Prices <https://www.gov.uk/government/statistics/wholesale-fruit-and-vegetable-prices>