

## Woody Plants as Cut Flowers®

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The volume and range of species used as cut foliage crops in the cut flower market has significantly increased, with many of these species being woody garden plants. The aim of this project is to evaluate a range of new foliage species for the cut flower market by measuring yield and specification of stems produced. The species being evaluated have not been grown before in Northern Ireland, and the information recorded will allow growers to assess their potential. Interim results for *Baccharis* 'Magical Star', *Bupleurum fruticosum*, *Photinia* × *fraserii* 'Red Robin', *Hypericum* 'Magical Sweetheart', *Rosa* 'Magical Fantasy', *Salix purpurea*, *Salix caprea* 'Silverglow', and *Symphoricarpos* species are outlined. For example, *Hypericum* and *Symphoricarpos* met the local wholesale market specification and yielded between 22 and 27 saleable stems per plant in Year 2 and Year 3, respectively, from planting.

### INTRODUCTION

Many woody shrubs and trees, and some flowering perennial plants, produce attractive leaves, bark, stems, buds, berries, catkins, or flowers that all lend themselves for use in floral arrangements. Cut foliage is normally field-grown outside to give commercial yields. Volumes and prices of some foliage species traded in Holland are available in the Dutch VBN auction Statistiekboek (Anon, 2006).

Foliage stems for marketing are on average cut to 60 to 70 cm in length and are usually sold in bunches of 10 stems. However, shorter stems can sometimes be used in table top decorations.

**Market Potential.** The U.K. cut flower and indoor pot plant market is worth £2.2 billion (Flowers and Plants Association website, 2007 < <http://www.flowers.org.uk/index.htm> >) with foliage estimated to account for at least 10% of the flower market. As the flower market has expanded, demand for foliage has increased for use as the main display item in floral designs and in its traditional role as a "filler" in flower bouquets. Up to 30% of flower bouquets now consist of foliage compared with 5% 10 years ago.

Florists remain one of the main foliage customers and normally purchase from local wholesalers or direct from growers. However, most expansion in the market has been through multiple retailers who now buy from dedicated flower packers who, in turn, source and design products for them. These retailers look for a regular supply of larger volumes at an agreed specification and fixed prices. Larger buyers are often seeking all-year-round material or season extension, which can sometimes be achieved by sourcing from different regions with different climatic conditions.

**Foliage Technology Project at Greenmount Campus.** The project is evaluating potential foliage crops that could be adopted by growers in Northern Ireland. A

successful foliage crop has to have desirable leaf colour and texture, have adequate vase life, be relatively free from pests and diseases, and have the ability to rejuvenate after being cut back during harvest.

A selection of the more highly managed and higher value foliage crops that have not been traditionally grown in the U.K. were evaluated (Table 1). Some are named varieties or selections made especially to suit the foliage market, with longer stems for example. Some varieties are subject to plant variety rights.

**Table 1.** List of taxa for evaluation.

Species/cultivar	Feature
<i>Aesculus hippocastanum</i>	Horse chestnut for spring buds
<i>Baccharis</i> 'Magical Star'	Buds and flowers in October
<i>Bupleurum fruticosum</i>	Sea green coloured leaves
<i>Forsythia</i> Golden Fantasy® forsythia	Flowers on one-year-old wood
<i>Hydrangea macrophylla</i> 'Deutschland'	Outdoor flower
<i>Hypericum</i> 'Magical Sweetheart'	Pink berries
<i>Ilex verticillata</i> 'Magical Berry'	Deciduous holly
<i>Photinia</i> × <i>fraseri</i> 'Red Robin'	Red leaves
<i>Photinia</i> × <i>fraseri</i> 'Curly Fantasy'	Orange hue
<i>Rosa</i> 'Magical Fantasy'	Rose hips
<i>Salix babylonica</i> var. <i>pekinensis</i> 'Tortuosa'	Twisted willow
<i>Salix purpurea</i>	Stems used in designs
<i>Salix caprea</i> 'Silverglow'	Pussy willow — furry buds
<i>Symphoricarpos</i> 'Magic Snowflake'	White berries

Four species of *Eucalyptus* (*E. gunnii*, *E. parvifolia*, *E. perriniana*, and *E. rubida*) were planted as a reference crop.

## MATERIALS AND METHODS

*Eucalyptus* and *Bupleurum* were seed raised and planted in July 2004. All the other species/cultivars were planted as liners or bare-root material between October and December 2004.

The soil was a medium loam with high clay content. A soil sample was taken prior to planting, and nutrients were added in July 2004 according to recommendations for field-grown nursery stock (Fertilizer recommendations: Ministry of Agriculture, Fisheries and Food; Reference Book 209, HMSO, London). After the plants had been established for one growing season, top dressing (12%N–10%P–18%K) was applied in spring, to give N at 50 kg per ha.

Woven polypropylene material was laid down on beds prior to planting to control weed growth. This was judged to be more cost-effective in the long term than chemical control or mechanical weeding.

**Project Layout.** Plants were planted in 10 m × 10 m plots with the area between the plots grassed down to allow space for management and observation. Spacing

was chosen to allow good air movement between plants, which can be important in reducing incidence of diseases such as downy mildew in moist conditions.

*Hypericum* was planted at 1-m spacing (10,000 plants per ha); *Photinia* and *Hydrangea* at 1.2-m (6,950/ha). All other species were at 1.5 m (4,450 per ha). Plant costs ranged from 50p to £2.50 per plant plus transport costs, depending on the species required.

*Eucalyptus* was pruned to 1.3 m tall. *Hydrangea* was not given any pruning. *Ilex verticillata* was given a special pruning regime because berries are borne on 2-year-old wood. The remainder of the species were pruned to 15–25 cm each spring.

A regular spray programme (four to five sprays per year) to control pests such as aphids and diseases such as mildew is required, with the number and frequency of sprays depending on the crop species and its susceptibility.

## RESULTS

Interim results for eight of the crops in the trial are presented.

***Hypericum* 'Magical Sweetheart'**. This is a pink-berried hypericum planted in October 2004. Plants cost £1.00 each plus transport. During spring, the plants were cut back to 15 cm. In addition to a spring topdressing, magnesium sulphate at 1 kg per 100 L was applied, because hypericum has a high demand for magnesium when the berries are forming. This cultivar is rust resistant, but rust-susceptible taxa will require regular spraying.

**Table 2.** Yields of marketable stems for *Hypericum* 'Magical Sweetheart' per plant.

Length of stem	50–60 cm	60–70 cm	70–80 cm	Total
2005	0	0	0	0
2006	16	6	0	22
2007	6	10	11	27

Stems were harvested over a 3-week period from the last week in July to the third week in August and met the wholesaler specifications. A range of cultivars are required since the market desires three or four colours of berry including red, black, and green. The 70- to 80-cm stem is termed a "spray" *Hypericum* — a main branch plus three or four side stems is regarded as a premium product with a 35p/stem guide price at the local wholesale market. The 60- to 70-cm branches with side stems average 20–25p per stem wholesale. The shorter 50- to 60-cm stems can sometimes be used by florists, for example in table top designs.

***Bupleurum fruticosum***. *Bupleurum* is mentioned as a plant of interest to flower arrangers, but it is not sufficiently hardy for our inland site, which can experience temperatures down to -6 °C in winter. Approximately 30% of the plants were lost, which is commercially unacceptable. It may do better in mild coastal areas. The stems have a short harvesting period when they are sufficiently firm. Some buyers liked the pale green colour of the stems.

***Salix purpurea***. This willow produced large numbers of long thin stems suitable for specialist design work. But local buyers were not interested in the product, so the species has been dropped from the trial.

***Baccharis* 'Magical Star'**. Although still to be accepted by the markets, *Baccharis* produces a large number of quite woody stems that bear white flower buds opening October to November. The yield in 2006, from a 2004 planting, was 45 stems/plant of 60 cm and longer. Stems were sold to a local florist for use in floral designs.

***Symphoricarpos* 'Magical Snowflake' (snowberry)**. Harvesting began when up to one-third of the characteristic white berries had formed. If left too late, some berries can turn brown. In 2006 the yield was 27 stems per plant of 60 cm and longer, and in 2007 the yield was 23 stems.

***Rosa* 'Magical Fantasy'**. 'Magical Fantasy' is grown for the rose hips that are used in autumn floral designs. This is an early harvesting cultivar with the hips maturing in September. From a 2004 planting, an average of 20 stems per plant (40–70 cm) were harvested in 2007. This cultivar has thorns, but florists and buyers prefer thornless cultivars. Presently, thornless cultivars, which mature later in the autumn, are being evaluated.

***Salix caprea* 'Silver Glow'**. This cultivar of pussy willow bears white Furry buds on black stems. As well as being pruned back to 20–30 cm in March, it also has to be pruned to 1.2 m in June to stimulate re-growth to produce a crop of stems of 60–120 cm. We did not do this in 2006, and the resulting growth was too vigorous, and the stems produced were too large and not uniform. Small numbers of stems were produced in 2005 that met buyer specifications. This plant is harvested in March, and stems can be used in designs or sometimes as a filler or feature in seasonal flower bouquets.

***Photinia* × *fraseri* 'Red Robin'**. Niche item sold for red-coloured leaves that should be harvested when growth has firmed during summer and autumn. Eight stems per plant were produced in 2006 from crop established from liners in 2004. Crop established from 5-L, air-pruned plants in 2004 produced 20 stems/plant in 2006. The crop was sprayed a number of times against aphids and other sucking insects to prevent leaf distortion.

## DISCUSSION

Interim results show that two seasons' growth is required from establishment to produce a significant yield of saleable stems, which is comparable with the experiences of growers in Holland (Hamrick and Kolster, 2004).

Use of a woven polypropylene ground cover provided good weed control at a cost of 33p per sq m. This material also helped to conserve soil moisture during dry periods. However, applying a fertiliser top dressing to plants was difficult with the material in place. Fertiliser has to be placed under the material and is then often slow to wash into the soil because the material acts as a barrier to water penetration.

Crops in 2007 exhibited some nutritional deficiencies because we did not apply sufficient top dressing earlier in the spring. This emphasises the necessity to apply adequate fertiliser around the plants to compensate for the nutrients locked up in the material removed at harvesting.

Our study is showing that foliage crops can be categorised into two main groups:

- Low input, extensive commodity foliage, e.g., *Eucalyptus*.
- High input, intensive niche foliage, e.g., *Ilex verticillata*.

The second group requires more management and will tend to be grown on smaller areas.

**Grower Adoption.** There were no cut foliage crops produced in Northern Ireland when these trials started in 2002. Now there are eight growers with a total of approximately 18 acres. The new growers have planted small trial areas to test the local market and evaluate the economics of production.

#### **LITERATURE CITED**

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#### **FURTHER INFORMATION**

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