Guidelines for the Sustainable Management of Remnant Vegetation Harvested for *Banksia hookeriana* Cut-flowers

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Introduction

Banksia hookeriana, called 'hookerana' by the cut-flower industry, was the leading banksia in terms of cut-flower production in 1993. More than 87% of the 1993 harvest was obtained from Crown land. Premium (export) prices are paid for blooms that are large and unblemished with straight stems 300 mm long. Because of increasing concerns about the viability of heavily picked populations, and the risk of disease spread, it is likely that an increasing proportion of *B. hookeriana* blooms will be obtained from private property remnant vegetation and plantations in the future. The natural distribution of *Bankia hookeriana* is an area of about 400 km^2 on the northern sandplains of Western Australia near Eneabba 285 km north of Perth. Annual rainfall in the area averages about 500 mm.

The purpose of these management guidelines is to advise on the best methods to sustainably manage *B. hookeriana* and the remnant vegetation from which it is harvested to protect the conservation values of the remnant. The guidelines are based on the large amount of research into the species carried out by Dr B. Lamont and colleagues from Curtin University of Technology, and on recommendations by farmers who have produced *B. hookeriana* blooms from their remnant bushland.

Biology

Banksia hookeriana is a sclerophyllous shrub (to 3 metres high) which is killed by fire. Reproduction depends on seeds stored in its cones which remain on the plant. After fire has singed the cones the seeds are released into the ashbed. Germination occurs in the first winter after fire, flowering occurs after 3 - 4 years but storage of viable seeds is rare in plants less than five years old. Shoot growth occurs from August to March with most occurring during the summer, and flower development occurs over a seven month period from January to September.

Fire

Some producers of *B. hookeriana* blooms from farm bushland burn the stands at 10 - 12 year intervals. This is done to 'rejuvenate' the stands. After the plants are about 10 years old their stems become short and crooked and they produce few saleable stems. Best production of blooms occurs when plants are 6 to 8 years old. Care must be taken to ensure stands are protected from wildfire, if they are burnt before about 6 years of age not enough seed will have been produced to replace the parent plants. Post-fire death of seedlings because of drought may be very high. Research indicates that the minimum interval between fires should be 15 years in unpicked stands and 20 years where harvesting has occurred.

Burning is recommended to be carried out in late autumn (May) after opening rains have occurred. High losses of seedlings may occur from drought if burning is done too early. If the stand is under stress from drought or disease, intense fire when the soil is dry may lead to a loss of *B. hookeriana* from the bushland. In stands under disease or drought stress, or have been over-harvested, it is advisable to

increase the fire interval to 25 - 30 years, because less seed would have been produced.

If burning is used as a management tool it is advisable to separate the remnant vegetation into a number of areas using firebreaks so that only part of it is removed from production to allow for adequate post-fire recovery before harvesting is recommenced.

Recommendation

- Remnant vegetation being managed for the production of cut-flowers from *Banksia hookeriana* should not be burnt at intervals of less than 15 years.

Pruning

At the present time there is little pruning of *B. hookeriana* in remnant bushland. In plantation trials pruning has been shown to increase shoot growth and bloom yield and appropriate methods have been described. However, pruning to increase the production of blooms has not been trialled in remnant vegetation stands *of B. hookeriana*. Pruning will only increase bloom production if it is done in new (1- 2 year-old) wood. The age of wood can be estimated by counting the number of nodes back from the growing tip, with one internode indicating one year of growth.

Fencing

It is strongly recommended that remnant bushland is fenced off. Studies have shown that the general health of remnant vegetation declines if it is grazed. The seedlings of *Banksia hookeriana* are particularly vulnerable after fire.

Recommendation

- Remnant vegetation being managed for the production of cut-flowers from *D. formosa* should be fenced to exclude livestock and should not be grazed.

Harvesting

It is recommended that no more than 20 - 30% of blooms be taken in one year depending on the age of the plants. Extensive research has shown that harvesting may cause a loss in seed accumulation on the plant greater than is accounted for by the removal of blooms, especially if the harvesting cuts are made in older wood. In other words, heavy harvesting of plants (more than 30% of blooms taken each year) reduces the general health of the plant and its capacity to set and accumulate seed.

Recommendations

- No harvesting of blooms should occur before the plants are 5 years old.
- No more than 20% of blooms should be harvested from plants between 5 and 8 years old and on these plants the cuts should only be in 1 y.o. wood.
- No more than 30% of blooms should be harvested from plants over 8 y.o. and the cuts on these plants should be in wood less than 3 years-old.
- No harvesting should occur for a year prior to an area being burnt.

Fertilizers

Fertilizer is not applied to *B. hookeriana* in remnant vegetation. Like all banksias, *B. hookeriana* is sensitive to high levels of phosphorus and care should be taken to reduce the influx of this fertilizer, which may also encourage weed invasion of the remnant.

Recommendation

- Remnant vegetation being managed for the production of cut-flowers from *D. formosa* should be fenced to exclude livestock and should not be grazed.

Disease

Banksia hookeriana is highly susceptible to dieback disease caused by the root-fungus *Phytophthora cinnamomi*. Care should be taken not to allow the movement of infected soil into, or between, stands and secateurs used for harvesting should be disinfected regularly to prevent the spread of disease between plants. Wiping secateurs with a cloth soaked in methylated spirits is a quick way of disinfecting them.

Recommendations

- Adequate hygiene measures should be undertaken to protect remnant vegetation being managed for the production of cut-flowers from *B. hookeriana* from plant disease.

References

- Sprigg and M. Webb. 1994. *A Study of the Processed Wildflower Industry*. Western Australian Department of Agriculture, Miscellaneous Publication No.44/94. *Note*: the actual production was over 3,000,000 stems.
- Webb, M. 1991. *Banksias for cut flower production*. Western Australian Department of Agriculture, Farmnote 5/91.
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