

Lavant Horticultural Society

"Why do Foxgloves have no Smell?" – Wed 9th October 2019

some notes from the talk by *Alan Edmondson* [Apologies that these notes are by no means comprehensive]

Fragrance exists to aid a plant's overriding objective – propagation.

NB: Alan stressed that there will be exceptions to the general rules he mentioned.

Reasons for lack of fragrance:

- wind pollinated, so no need to attract pollinators : e.g. grasses (including sweetcorn, *which is why it needs to be planted in a block, rather than a row*);
- Umbelliferae [Apiaceae] (e.g. cow parsley) & Compositae [Asteraceae] (daisies): have no smell as they have masses of small open attractive flowers that are easy for insects to find.
- Intense scarlet or golden yellow flowers are not fragrant – their energy goes into producing the deep colour at the expense of fragrance:
 - *Ordinary white hawthorn is very fragrant, but the red version has no smell.*
 - *Red campion has no fragrance, but a very short tube, giving easy access to hoverflies in particular; white campion has a longer tube – it is strongly fragrant at night and is pollinated by moths that have a longer proboscis.*
- Plants that evolved prior to insects have no smell, e.g. conifers, willow, birch – pollinated by wind.
- Self-pollination: Clarkia, Lilium, tomatoes. Also wild primroses and cowslips.

Pollination by flies:

Plants that appeared quite early in evolution, e.g. mistletoe – slightly scented.

Scent – arimoid group – trimethylamine, e.g. Ligustrum vulgare, Hemlock, Crataegus (hawthorn).

Smell of rotten fish – attracts flies.

Scent – Indoloid group, e.g. Trillium, Dranunculus, Stapelia (SA carrion flower).

Smell of rotting meat – colour of flowers similar to rotting meat – attracts flies.

Once Dranunculus has been pollinated, the smell disappears.

Pollination by beetles: 8,000 species of mammals, 9,000 of birds, 400,000 of beetles

Magnolias, water lilies, Lysichitum (skunk cabbage).

Flowers typically white with a heavy fragrance.

Victoria amazonica (Amazonian water lily):

first night – flower opens white with female part prominent, very fragrant, attracts beetles, closes trapping beetles inside;

second night – flower opens, liberating beetles – now male part more prominent, colour has turned to pink and the fragrance has disappeared.

Pollination by bees:

Bees do have some sense of smell, but are very attracted to the colour blue – they are blind to red but can see ultraviolet.

e.g. violas, crocus – much more obvious to bees seeing in ultraviolet spectrum and the markings on the petals are nectar guides / pollen guides.

Borage, *Nemophila menziesii* (baby blue eyes)

None of these have fragrance, but bees attracted by the blue colour of the flowers.

Pollination by butterflies (which do rely on sense of smell):

e.g. Daphne, Dianthus (old-fashioned varieties that have not have the clove fragrance bred out of them),
Buddleja –three buddleja bushes with a 3 year pruning cycle give a longer period of flowering:

- 1st year: prune one at recommended time, the second 6 weeks later and the third do not prune at all;
 - 2nd year: prune at recommended time the one that was not pruned at all last year, prune 6 weeks later the one that was pruned at recommended time last year, and do not prune at all the one that was pruned 6 weeks after recommended time last year (*and so on ...*).

Pollination by moths: Good butterfly garden = 15 species; good moth garden = 200.

Attracted by fragrance, especially night-time, and white or pale flowers.

e.g. honeysuckle – *Lonicera caprifolium* – particularly fragrant at night – white/pale yellow flowers.

To find moths, paint a 4 in band of a treacle/Guinness mixture around tree and view at night, using a torch with red film over it.

Chemical compounds that produce the fragrance

Arimoid group – trimethylamine, } see 'Pollination by flies'

Indoloid group } on previous page

Esters: Heavy scent with a smell nice: e.g. Philadelphus, jasmine.

Aromatic group (essential oils, easily vaporised): e.g. lemon thyme, verbena, roses, citrus.

Eugenol – clove scent:

Pinks, *Ribes odoratum* (the strongly fragrant flowers are yellow - unusual for *Ribes*),
Silene nutans (Nottingham catchfly – called catchfly due to sticky hairs on stems).

Rose group:

Main fragrant essential oil is geraniol

Rosa damascena - grown commercially for its rose oil (attar of roses).

Recommendations for a fragrant garden

Fragrant shrubs:

Viburnum carlesii – deciduous, spring-flowering, very fragrant

Philadelphus 'Belle Étoile' – some mock oranges can get very large – this is a more manageable size.

Daphne 'Jacqueline Postill' – very fragrant, flowers late January/February. Not easy to propagate.

Roses: 'Mme Grégoire Staechelin' – climbing rose, but not repeat flowering.

'Eglantyne' – David Austin – strong fragrance – repeat flowering.

'Buff Beauty' – tall shrub rose, growing to 5-6 ft – repeat flowering.

Fragrant herbaceous perennials:

Hemerocallis lilioasphodelus – yellow and highly fragrant, unusual for *Hemerocallis*;

Dianthus (Pink) 'Inchmery';

Paeonies (deep red paeonies not fragrant);

Hesperis matronalis – Dame's violet, sweet rocket – best treated as biennial.

Fragrant annuals:

Nicotiana – especially N. alata (some modern cultivars have been bred for low stature and colour at the expense of fragrance);

Sweet peas;

Matthiola longipetala (night scented stock) – only opens up at night.