

Ornamental pumpkin selection[©]

D. Grant^a

Hybrid Seed Company New Zealand Ltd., 326c Patumahoe Road, RD 3, Pukekohe 2678, New Zealand.

Pumpkins or members of the *Cucurbitaceae* family have a number of uses. Ornamental uses include autumn decoration with Halloween types (Jack-o'-lanterns, carving, painting, displays and stackers), chucking pumpkins, giant pumpkins for competition and giants for boat racing. To complete the picture Cucurbits are well-known for their culinary use for baking, soups, pies and processing for canning (pies and baby food).

The *Cucurbitaceae* family contains the economically important species: *Citrullus lanatus* (watermelon), *Cucumis sativus* (cucumber), *Cucumis melo* (melon) and *Cucurbita*. The genus *Cucurbita* contains five domesticated species. *C. pepo* (summer squash, crookneck squash, marrow, acorn, gourd, pumpkin), *C. moschata* (winter squash), *C. maxima* (winter squash and pumpkin), *C. argyrosperma* (winter squash) and *C. ficifolia* (fig-leaf gourd). *Lagenaria siceraria* (bottle gourd) is another species from the *Cucurbitaceae* family which is cultivated for ornamental uses.

Ornamental cucurbit types can be classed into the following categories (Figures 1-4):

- Giant pumpkins (*C. maxima*): 150 to 250 kg.
- Big or extra-large pumpkins (*C. maxima*): 20 to 70 kg.
- Large sized Halloween (*C. pepo*): 10 to 20 kg.
- Medium sized Halloween pumpkins: 7 to 10 kg.
- Small to medium sized pumpkins: 3 to 7 kg.
- Small and pie sized pumpkins: 1 to 3 kg.
- Miniature pumpkins: less than 0.45 kg.
- Whites and other colours: range of sizes.
- Speciality or novelty types includes: super freaks, turbans, stackers, and coloureds.



Figure 1. *Cucurbita pepo* germplasm collection.

^aE-mail: dougg@hybridseed.co.nz



Figure 2. Mini pumpkin germplasm.



Figure 3. Ornamental pumpkin display.



Figure 4. Super freak pumpkins.

Large-type ornamental gourds (*Lagenaria siceraria*) include the bottle gourds, Apple gourds, Snake gourds, Club types and Swan type gourds. Major uses are decoration, containers, utensils and musical instruments.

Breeding objectives of the Hybrid Seed Company programme for ornamental pumpkins includes developing Halloween and Super Freak type F₁ hybrid pumpkins for

appearance (size, shape and skin colour), disease tolerance, adaptability, plant habit and yield.

Pumpkins and squashes are herbaceous annuals with long vines or runners although bush plant habit forms exist. *Cucurbita* species are monoecious with bright yellow-orange flowers with separate pistillate and staminate flowers on the same plant. Flowers are pollinated by insects mainly honey bees and bumble bees. For breeding, self and cross pollinating is done by hand using paper bags to exclude insects from pollen contamination. Parent seed increases and small hybrid productions are carried out in cages with insect mesh. Larger seed productions are carried out in isolation in field blocks.

Germplasm used in the breeding programme is sourced from all over the world and also from material shared between collaborators to our programme. This includes the use of heritage-type varieties. Selections are made from segregating and back cross populations to develop inbred lines. Interspecific crossing has been used to incorporate important characteristics such as disease tolerance. *Cucurbita ecuadorensis* has tolerance to papaya ringspot virus, watermelon mosaic virus and powdery mildew. *Cucurbita okechobeensis* has tolerance to powdery mildew and cucumber mosaic virus but is susceptible to watermelon mosaic virus I and II.

Inbred lines produced are tested for combining ability and experimental hybrids are then developed. Evaluation of experimental hybrids are carried out in trials throughout the world. Breeding lines are screened for disease reaction to powdery mildew, downy mildew and fruit rots.

