

Section 7

Calceolaria

P. Allen Hammer, Purdue University

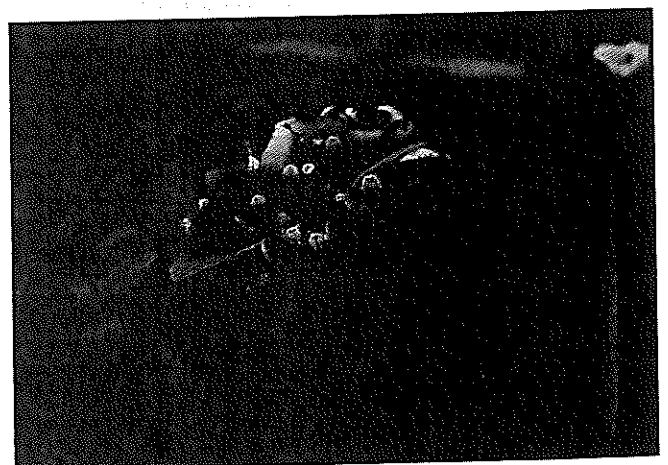
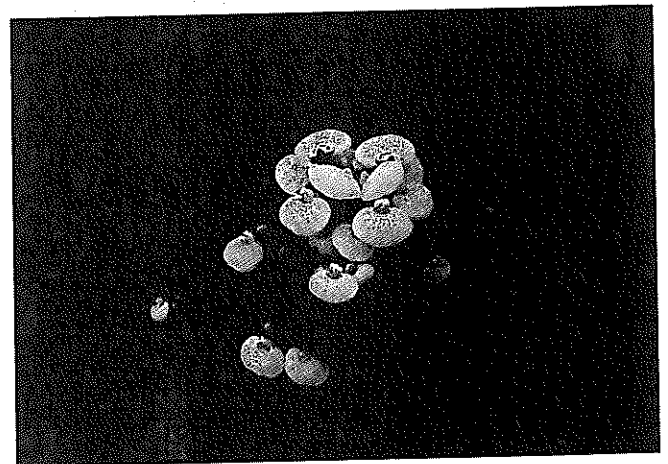
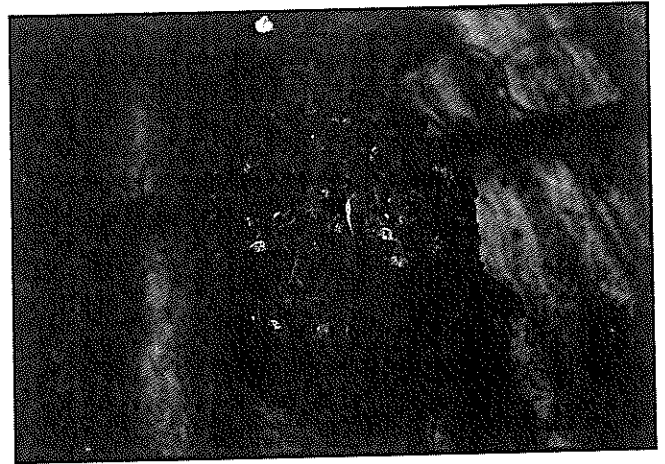
The “pocket-book” plant (Figures 7-1, 7-2, and 7-3), *Calceolaria herbeohybrida* Voss is not widely grown; but it is a plant that can provide an interesting diversity in your crop mix. Calceolaria is not a particularly easy crop to grow. It is somewhat “soft” and must be treated well in the marketing chain. For these reasons, growers have tended to shy away from calceolarias, particularly as a mass market plant.

Calceolaria is seed propagated. At 64 to 68°F, seeds germinate in 8 to 10 days. Seeds are very small and should not be covered; they should be germinated in the light. A pathogen-free medium is required for germination, and sanitation during this period is extremely important to avoid damping-off problems.

Seedlings should be transplanted to cell packs or 3-inch pots three to four weeks after seeding. After four to five weeks, the grower can either transplant to a 4-inch intermediate pot or directly into the final 5- to 6-inch pot. Plants should be finished in a 3-quarter or azalea pot.

Calceolaria require either cold induction or long days to flower. Older cultivars require six to eight weeks at 45 to 55°F for flower induction, while the newer cultivars flower with long days (18 hours) beginning after plants have developed four to five leaf pairs. Plants should be grown at 60°F nights until flower induction. If long days are used for flower induction, 60°F nights should continue. Plants are best finished at 50 to 60°F under long days. Long day may cause some plant elongation, particularly with incandescent lighting and the warmer temperatures. Additional chemical growth regulator application may be required to reduce this stretch from the long-day treatment.

Calceolaria require low fertility. Calceolaria should be fertilized at lower levels of N and K than you use for cineraria. Constant fertilization at 100 ppm N and K plus phosphorus is usually adequate. High levels of ammonium nitrogen should be avoided to reduce the possibility of ammonium toxicity, particularly when growing plants at the cooler temperatures. Small calceolaria plants are very sensitive to drying, therefore much care must be used in watering the plants at that stage. Drying also delays flowering.



Figures 7-1 to 7-3. The “pocket-book” shaped flowers come in vivid reds and yellows, with many single and bicolors in between.

Cycocel has been the most widely used height control chemical on calceolaria. Two foliar sprays of 400 ppm Cycocel applied at visible bud and two weeks later help reduce plant stretch at flowering.

Aphids, whitefly, and thrips can be troublesome pests with calceolarias. Root and crown rots, as well as *Botrytis*, are serious disease problems that must be monitored and controlled. Tomato spotted wilt virus (TSWV) and impatiens necrotic spot virus (INSV) can both cause serious crop losses. Western flower thrips control is extremely important. If you purchase small seedlings, be sure to check for the virus and place the seedlings in a separate area for a few weeks until you are sure the plants are healthy and disease free.

There are a number of cultivars of calceolarias available to the greenhouse grower in both grandiflora and multiflora types. The grandiflora tend to

have fewer, larger flowers, and the multiflora types tend to have greater numbers of smaller flowers. There are a number of different schedules published in the literature for calceolaria production depending on the specific cultivar being grown. Figures 7-4, 7-5 (page 42), and 7-6 (page 42) illustrate general examples found in the literature that will work for most of the cultivars. Check with your seed supplier for specifics about each cultivar.

Sun scald or burn can be a problem with calceolaria during any stage of growth. Maximum light intensity of 5,000 footcandles is recommended. Shade is often required during much of the year. Growers sometimes fail to apply shade late in the production season and flowers are burned, making the plants unsaleable. Calceolaria plants should also not dry to the point of wilting, because foliar and flower damage can occur. Overhead watering should be avoided, particularly at flowering.

Figure 7-4. An example of a traditional schedule for the production of calceolaria in a 5- to 6-inch pot.

