

A COMMERCIAL GROWERS GUIDE

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Producing Impatiens

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I. History

- A. Impatiens are among the most popular bedding plants produced today. The popularity of impatiens has rapidly increased because of their profuse blooming under shady conditions, wide color selection and low maintenance needs.
- B. Impatiens are among the nearly 500 species in the balsam family (Balsaminaceae). The species used as a bedding plant is *Impatiens wallerana* (which includes *I. holstii* and *I. sultanii*).
- C. Discovered in 1896 by Sir J.D. Hooker, impatiens are widely distributed across Africa, Asia and North America.
- D. Impatiens are also known as Touch-Me-Nots because of the way the ripe seed pods shatter when touched.

II. Cultivars

- A. For best results, purchase fresh F1 hybrid seed each year from a reputable supplier. If you must store seed from one year to the next, place it in a cool, dry area away from insects and rodents.
- B. F1 hybrid seed has a high germination rate and results in plants with increased vigor, prolific flowering and a naturally dwarf habit that requires no pinching.
- C. Popular flower colors include red, orange, white, salmon, violet and pink. Foliage may be bronze or green, depending on variety.
- D. Plant size ranges from 8 to over 14 inches.

III. Propagation

- A. Impatiens are commonly propagated by seed. There are 35,000 to 60,000 seeds per ounce. Seed count varies greatly by variety. Check the number of seeds required for the variety to be grown.

- B. Seeds require a moist, light, disease-free medium for germination. Peatlite mixes work very well because these mixes are generally free of pathogens, provide good aeration and are able to maintain adequate moisture levels necessary for good germination. Soil-based mixes are not recommended. However, if one is to be used, it must be properly pasteurized before the seed is sown.
- C. The pH of the medium is very important for good germination. The pH should be maintained between 5.5 and 6.0. A pH of 5.0 can inhibit germination by 60 percent.
- D. Sow seed accurately to eliminate waste and produce the maximum number of seedlings per ounce of seed.
 1. The most efficient method of sowing impatiens is with an automatic seeder.
 - a. Thoroughly moisten plug trays before planting to eliminate the possibility of washing away the seeds after they are sown.
 - b. A No. 406 plug tray is small enough to produce the seedlings economically but large enough to allow the plants ample room for growth until transplanting.
 2. Seeds can also be sown by hand.
 - a. Preformed seed trays with rows are preferred over open bottom flats to help reduce the spread of disease through the flat.
 - b. Sow the seeds at a rate of 500 to 1,000 seeds per flat.
 3. Sow the seeds directly on the soil surface and cover with $\frac{1}{16}$ inch of fine vermiculite. Impatiens seed requires light to germinate, and vermiculite will maintain adequate moisture around the seed while still allowing enough light to penetrate.

E. Adequate moisture levels must be maintained for successful germination. Thoroughly moisten the medium before sowing. Water temperature should be between 70 and 78 degrees F to ensure that the soil temperature is warm enough for good germination.

1. After sowing, cover the trays with clear polyethylene to maintain high humidity levels. Humidity must be held as close to 100 percent as possible. Take care to keep the temperature from reaching damaging levels under the plastic on warm, sunny days. Support the plastic above the seed trays to prevent the seedlings from sticking to the condensate that collects on the plastic. Covered flats should not require watering until after the seedlings have emerged.
 2. Use capillary mats to help maintain an even moisture level across the flats and to provide a means of subirrigation when the flats require water.
- F. Temperature is critical for good germination. Soil temperatures should be maintained between 70 and 75 degrees F. Temperatures that are too high or too low will delay or reduce germination. After germination is complete, reduce the temperature to 65 degrees F until transplanting.
- G. Impatiens seed requires light for even germination. Provide supplemental lighting 24 hours a day to increase germination and accelerate early growth. High-pressure sodium lights or cool fluorescent lights encourage growth without causing excessive stretching. Lighting the crop, especially in the early stages of growth following germination, may reduce total crop time by one to two weeks.
- H. Seeds should begin to germinate in about 7 to 10 days, though complete germination may take up to 15 days. Maintain warm temperatures and high humidity until germination is complete.
- I. The use of growth rooms is becoming more prevalent in the industry because they offer excellent environmental control. Seeds are sown in an enclosed room under lights, instead of in the greenhouse. They are moved to the greenhouse after they pass the crucial stages of germination and early growth.

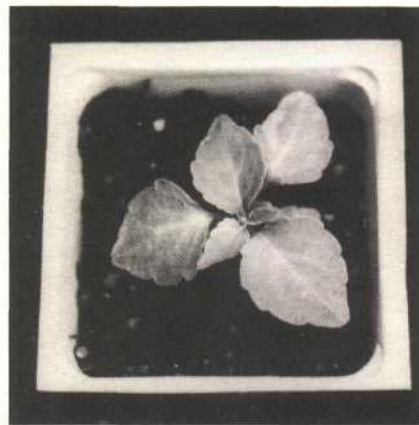
IV. Transplanting

- A. Transplant impatiens when the plants have formed the first set of true leaves. Unless grown in plugs, larger plants will suffer transplant shock when removed from the seed tray, which will delay growth or kill seedlings.
1. Plug-grown seedlings do not normally suffer from transplant shock, so they can be held for longer periods before transplanting. Transplant plugs before the seedlings begin to crowd each other and stretch. Depending on growing conditions, crowding usually begins about 6 to 8 weeks after sowing in a No. 406 plug tray. The larger the plug size when the seeds are sown, the longer the seedlings can be held before transplanting.
- B. Impatiens can be easily damaged by rough handling. Handle the seedlings by the leaves and not the stem when transplanting. If a leaf is damaged, a new one will grow in its place. If the stem is crushed, the seedling will die. Take care to minimize damage to the roots during transplanting. Damaged roots will slow the growth of seedlings and possibly lead to disease problems.
- C. Use light, disease-free medium to grow the plants to flower. A good mix will be free of pests, provide good aeration and be able to hold adequate amounts of moisture.
1. Do a soil test before transplanting—it is easier to make adjustments to the soil pH then. Adjust the pH at this time to between 5.5 and 6.0.
 2. Thoroughly moisten the medium before transplanting.
- D. Impatiens are usually grown in flats with 24, 32, 36 or 48 cell packs. Plants do equally well in 3½-inch pots, combination pots with other annuals and hanging baskets.
- E. Keep seedlings at 65 degrees F for a few days after transplanting to allow the seedlings to get a good start. Afterwards, the temperature can be dropped to 60 degrees F, if desired, for a harder plant. Do not grow impatiens at less than 60 degrees F. Lower temperatures may damage the plants by causing foliage on the upper parts of plants to turn white and halting plant growth.
- F. Adequate water is important to establish the seedlings. Immediately after transplanting, water in the seedlings to prevent drying out. If the plants suffer moisture stress at this stage, many plants may die.

Weekly stages in development of Impatiens.



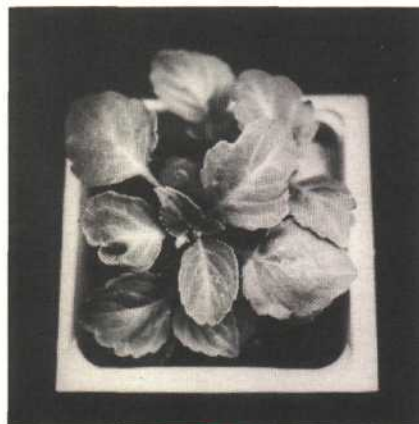
WEEK 3



WEEK 4



WEEK 5



WEEK 6



WEEK 7



WEEK 8

2. Chemical control.
 - a. Many pesticides are available to control insect and disease problems, though many insecticides have been shown to be phytotoxic to impatiens. Exercise caution when using these chemicals because of the dangers they present when used improperly.
 - b. Because new pesticides are constantly being introduced on the market, consult with the county Cooperative Extension agent for information and current recommendations.
- D. Several physiological disorders may detract from plant quality.
 1. Leaf drop is common in older plants. The most frequent cause of leaf drop is water stress. Do not allow the plants to wilt excessively between waterings.
 2. Occasionally plants will have good color, heavy growth and many leaves but no flowers. This problem is almost always caused by either excessive nitrogen levels or overwatering. Reduce fertilizer applications and water only when the soil is dry to eliminate this problem.

VII. Postharvest considerations

- A. Impatiens are normally sold when in flower.
- B. Properly identify the plants for the consumer with some type of label.
- C. Water the flats thoroughly before shipping to prevent drying out in transit.
- D. Handle the plants with care to prevent damage.
- E. Inform retailers of proper care to ensure that the consumer receives a quality product.
 1. Plants should be given adequate space in a shady location.
 2. The retailer should check for the need for water several times a day.
 3. If plants are placed in an enclosed area, the temperature should be monitored, also.
 4. Frost and cool temperatures are very common during the marketing period for impatiens. If possible, the plants should be marketed from a greenhouse-type structure. If the plants must be stored outdoors, the retailer should monitor night temperatures carefully and take action to prevent frost or chilling damage. If cool temperatures are expected, the retailer should move the plants to a warm, sheltered area.

Many other Extension publications are available on commercial flower production. Call, write or visit the Cooperative Extension Service Office in your county for more information. Following is a list of related publications available there or by writing to the MSU Bulletin Office, P.O. Box 6640, East Lansing, MI 48826-6640.

- E-1275, *Chemical Controls for Michigan Commercial Greenhouse/Bedding Plant Production* (55¢, for sale only)
- E-1276, *Insect Controls for Michigan Commercial Greenhouse/Bedding Plant Production* (55¢, for sale only)
- E-1375, *Producing Petunias for Profit* (free)
- E-1400, *Identifying Major Pests of Greenhouse Bedding Plants* (45¢)
- E-1443, *Producing Marigolds for Profit* (free)
- E-1493, *Geranium Rust-Symptoms/Disease Development/Control* (free)
- E-1579, *Growing Fibrous Begonias for Profit* (free)
- E-1663, *Producing Salvia for Profit* (60¢, for sale only)
- E-1664, *Producing Coleus for Profit* (free)
- E-1861, *Producing Potted Marguerite Daisies for Profit* (free)
- E-1996, *Producing Seed Geraniums for Profit* (40¢, for sale only)
- E-2136, *Producing Tuberous Begonias from Seed* (60¢, for sale only)

V. Growing on

- A. Space impatiens flat to flat in the greenhouse. Raise flats off the floor of the greenhouse to prevent the plants from rooting into the ground. The use of saran cloth or plastic risers is desirable. If possible, use raised benches for better aeration and temperature control.
- B. Maintain temperatures at 60 to 65 degrees F at night and 70 to 75 degrees F during the day. (Or, to keep plants short, provide night temperatures warmer than day temperatures—e.g., 65 degrees days, 68 degrees nights.) Excess temperatures in combination with high light levels can cause burning on upper leaves.
- C. Later in the season, shade the greenhouse for best growth. Note, however, that light levels that are too low may cause plants to stretch or reduce flowering.
- D. Provide adequate amounts of water but do not overwater. Excess water will result in lush, tall plants that are difficult to ship, have a short shelf life and perform poorly for the consumer.
- E. Like water, use fertilizer in moderation. High levels of fertilizer will cause lush growth. High nitrogen levels will produce plants with many leaves but few or no flowers. Apply a well balanced fertilizer, such as 15-15-15, at the rate of 100 ppm nitrogen every second or third watering.
- F. Impatiens responds to B-Nine if height control is necessary. If the plants are grown using good cultural practices, growth regulators are generally not needed. If required, B-Nine can be applied as a 0.5 percent foliar spray when the plants begin to elongate.
- G. In cell packs, impatiens is normally scheduled as a 10-week crop. Plants may be ready for sale as early as 8 weeks or as late as 12, depending on growing conditions. Baskets and pots require two weeks longer than flats.

VI. Plant problems

- A. Several insects can infest impatiens.
 - 1. Aphids are one of the most common insect problems on impatiens. They are small, soft-bodied insects, usually green, that feed on plant sap. The insects are usually found at the growing tips of the plant or on the undersides of the leaves. Plant symptoms include distorted or stunted growth. The most obvious sign of aphids is the sticky honeydew they excrete on the leaves that can provide a medium for black sooty mold.
- 2. Thrips are also found on impatiens. They are difficult to see because they are extremely small and hide within the flowers or the growing tips of the plants. To determine if thrips are present, shake the plant over a white sheet of paper. The dark-bodied insects can then be easily seen. Thrips cause distorted growth of both the flowers and leaves.
- 3. Spider mites, though not true insects, can infest impatiens. Spider mites are normally found on the undersides of the leaves, and their activity and growth increase under warmer temperatures. The first signs of infestation are distorted leaves with a slightly mottled appearance. Take steps for control at this time. In advanced stages of infestation, the spider mites will produce webbing over the tops of the plants. Once the webbing is visible, plant damage is usually extensive and the problem is very difficult to control.
- 4. Mealybugs are an occasional problem on impatiens. Mealybugs are usually found in leaf axils, appearing as a white, cottony mass. These insects damage the plant by sucking plant juices and producing honeydew.
- B. A few disease problems may infect impatiens.
 - 1. Botrytis can be a problem under cool, humid conditions. It usually appears as a gray mold on the soil or leaf surface. Botrytis is especially prevalent when plants need to be held before sale and flowers drop onto the foliage, providing a place for botrytis to take hold.
 - 2. Rhizoctonia and pythium are the diseases primarily responsible for damping-off. Seedlings wither at the soil line and the plants fall over and die. In mature plants, the roots turn black and die, causing stunted plants that will eventually die.
- C. Insect and disease problems may be controlled with cultural or chemical controls.
 - 1. Cultural control.
 - a. The easiest way to control insect and disease problems is to prevent them. The use of proper cultural procedures—temperature, watering and humidity—will help keep problems to a minimum.
 - b. Maintain sanitary conditions in and around the greenhouse. Use sterile soil and keep weeds to a minimum to eliminate host areas where disease and insect problems can begin.



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