Seed Starting and Gardening Basics

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Why start plants from seed?

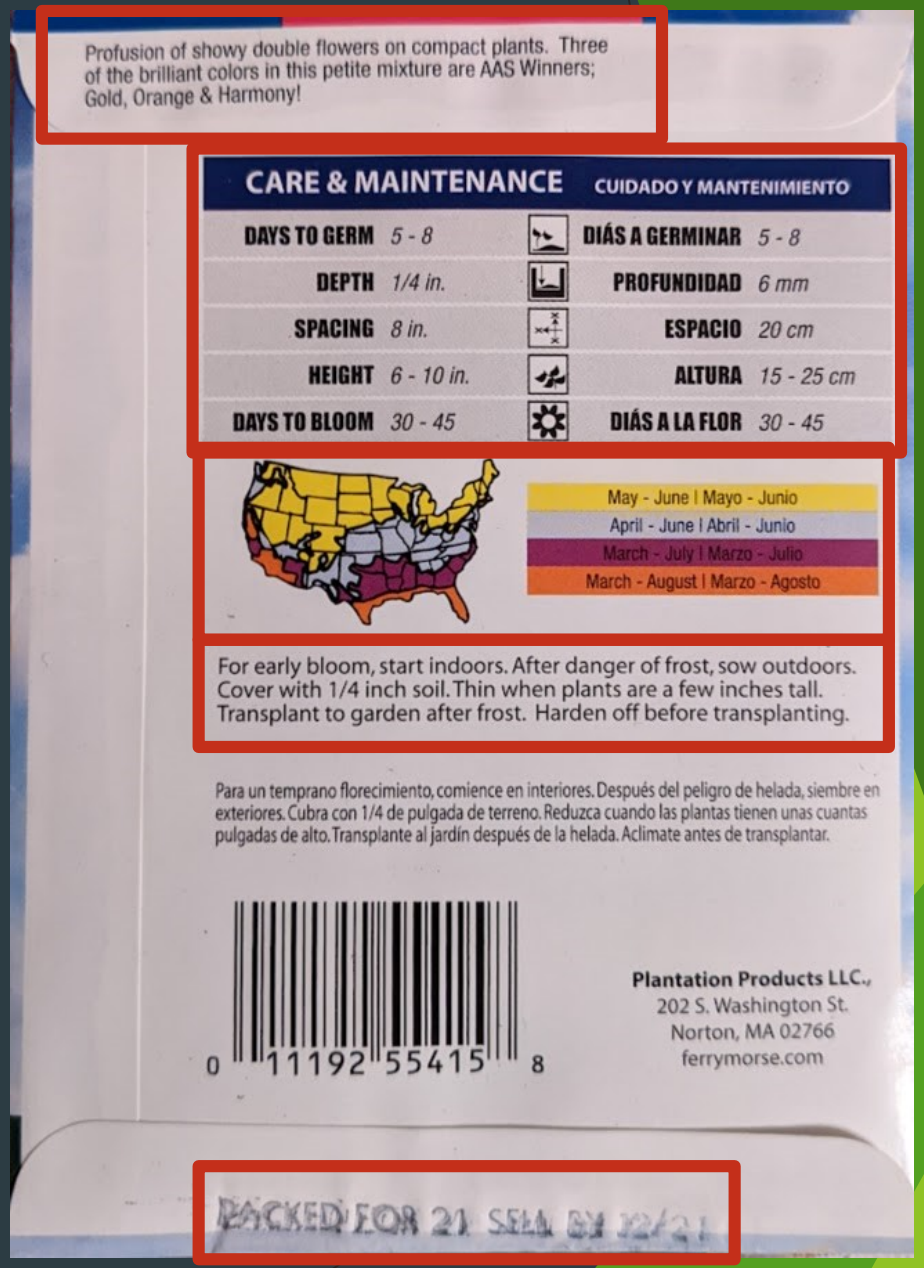
- Relatively inexpensive: can get many plants for the price of a few transplants
- More varieties: selection of transplants can be limited
- Replant seeds from previous year
  - Use heirloom varieties, hybrids may not germinate or may produce inconsistent results
- Harvest sooner: plants started indoors flower sooner than those started outdoors
- Get started gardening sooner!

Supplies

- Seeds
- Container
- Growing medium
- Grow light
- Heat mat*

Seeds

- Thousands of varieties available locally and online
  - Local seed swap events
- Choose varieties suitable for your area
  - reach maturity before frost, survive heat, and tolerate present growing conditions
- Purchase only enough for the current season
  - Seed can be stored, vigor declines with age
- Consult the seed package for specific growing information



Seed starting containers

- Plastic trays
- Peat pots
- Recycled containers
  - Yogurt, sour cream, cottage cheese
  - Egg cartons
  - Milk or juice jugs
  - Toilet paper rolls
  - Cups
  - Salad/deli containers
  - Wash all containers thoroughly and add drainage holes

Growing Medium

- Seed starting mix
  - sterile, uniform, soilless media without fertilizer
  - Regular garden soil is heavy, holds water, and often contains weeds or disease
- Peat pellets
  - Quick and easy to use
  - Slightly more expensive than bulk starting mix

Grow light

- Additional light can prevent seedlings from getting long (leggy)
- Seedlings require at least 12 hours of good light per day, and grow the best with around 16 to 18 hours of light
- Can use white lights or red/blue mix

Other accessories

- Heat pad
  - Increase germination rates and help achieve more uniform germination by giving you control over temperature
  - Increase growth rates by maintaining optimal root-zone temperature
- Labels
  - Keep track of what seeds have been planted and where
- Mister/spray bottle
  - Control the water and ensure the seeds are not being overly saturated

Starting Instruction

- Prepare soil and trays
- Add seeds
- Germinate
- Harden off
- Transplant

Prepare Soil and Trays

- Seed starting mix
  - Combine soil and water until well saturated, but not soggy
  - Cover tray with soil and smooth over with a trowel, removing excess
- Peat pellets
  - Arrange on the tray with the non-netted side up
  - Fill the tray with 1 inch of water and allow the pellets to fully absorb the moisture (30 to 60 min)

Add Seeds

- **Follow seed packet instructions**
- Add 2-3 seeds per cell/pellet
- Some seeds are buried and some germinate on the surface
- Add the dome or plastic wrap to retain moisture during germination
  - Shouldn't require any additional watering until the seeds sprout
- Place in a warm location out of direct sunlight until germination

Germination

- Allow plants to germinate fully and remove covering after leaves appear
- Place in a sunny location
  - Add a grow light if plants start to get leggy
- Keep moist but don’t overwater
- Wait until the danger of frost has passed
- If multiple seeds have germinated, choose the strongest one and pinch or snip off the others to prevent competition

Harden off

- Gradually exposes seeds to outdoor conditions
  - Day and night temperature fluctuations, increased air movement and wind, reduced watering, and full light
  - Especially important if pants are to be planted under stressful early season conditions
- On day above 45 degrees, place seedlings in an outdoor location that is protected from direct sunlight and wind for one hour
- Increase the outdoor exposure one hour each day
  - Don’t put tender seedlings outdoors on windy days or when temperatures are below 45 degrees
- After 2-3 days in a shaded location, seedlings can be placed in locations that receive morning sun and gradually expose them to more direct sun
  - Exposing very young seedlings to direct sunlight too soon can scorch the leaves
- If temperatures remain above 50 degrees, the seedlings should be able to handle increasing amounts of sunlight and can be left outdoors overnight
- After 7 to 14 days of acclimating your plants to the outdoors, they are ready to be transplanted

Transplant

- Plants are will have several sets of leaves and a sturdy root system when ready to be transferred
- Dig holes just deep enough to cover the top of the root ball
  - Follow seed packet instructions for spacing
- If possible, choose a cloudy day to transplant
- Water plants immediately. Allow the water to soak in, then water again until the soil is thoroughly moistened but not soggy

Lets Plant!

Gardening Basics

- Soils
- Fertilizing
- Planters and gardens
- Square Foot Gardening
- Additional Resources

Soil

Potting Soil

- Used alone for container gardens
- contains no natural soil; made of peat moss, organic material, and either perlite or vermiculite
- provides balanced moisture for container plants
- Intentionally sterilized to eliminate any microbes and kill weed seeds

Garden Soil

- an amendment that is mixed with native soil
- made of natural topsoil or sand blended with bulky organic material
- improves the texture of natural soil to balance its water retention and drainage abilities
- Retains microbes that were in the original natural soil

Mixing Potting Soil

- Can be significantly cheaper than purchasing store bought posting soil
- Can customize soil qualities for plants (e.g better drainage, more organic material, etc)
- For small to medium amounts, soil can be mixed on a tarp or in a large container
  - For larger amounts, a concrete mixer can be rented or purchased
- For a simple potting soil combine
  - 1 part peat moss: provides moisture and nutrient retention
  - 1 part perlite: provides aeration
  - 2 parts compost: provide nutrients
- Check the pH of your potting mix when finished mixing. Most plants require a 6.0-7.0 pH
  - Soil test kits can be purchased online and at local garden stores
  - Ground limestone can be added to raise the pH

Fertilizing Plants

- 3 major fertilizer components
  - Nitrogen: gives plants their green color and is needed to form proteins
  - Phosphorus: needed for cell division and to help form roots, flowers and fruit
  - Potassium: used for many of the plants chemical processes
- Can use a soil testing kit to mix fertilizer that is tailored to your soil and plant needs
- Most gardeners can use a “complete fertilizer” with twice as much phosphorus as nitrogen and potassium (10-20-10, 12-24-12, etc)
  - Use 2 to 3 pounds of fertilizer such as 10-20-10 for every 100 square feet of garden
  - Follow instructions on the package!
- Do not use too much fertilizer. This can kill plants!

Container Gardening

- Ideal for those with little or no garden space (balcony, small yard, or limited sun) or poor soil conditions (heavy rock, clay, etc)
  - Also can help protect against soil borne diseases, nematodes, and other pests
- Almost any vegetable can be grown in containers
  - Tomatoes, peppers, eggplant, green onions, beans, lettuce, squash, radishes and parsley
  - Pole beans and cucumbers also do well but require considerably more space
  - Look for varieties well suited to containers bush or small varieties (often referred to as dwarf or compact)
  - Plants that don't usually work well in containers include large melons, corn, large pumpkins or squash
- Containers cool off more quickly than the ground so plants may need to be started later (shortens growing days)

Types of Containers

- Large Pots
- Commercial planters
- DIY Containers
  - 5 Gallon bucket
  - Plastic totes
  - Kiddie Pool
  - Food grade barrel
- Ensure containers have good drainage

Square Foot Garden

- Divides growing area into 1 foot square sections
- Assists in planning and creating a small, densely planted vegetable garden
- Each square is planted with one, four, nine or sixteen plants depending on the plant's overall size
- Once a square is harvested, a different crop can be planted for a continual harvest
- Each square is used for a different kind of plant to serve as crop rotation
- Tall plants are trellised on the north side of the bed to avoid shading smaller plants

Additional Resources

- Virginia Cooperative Extension, Home Vegetable Gardening: https://ext.vt.edu/lawn-garden/home-vegetables.html
  - Plant Propagation from Seed: https://www.pubs.ext.vt.edu/426/426-001/426-001.html
  - Virginia's Home Garden Vegetable Planting Guide: https://www.pubs.ext.vt.edu/426/426-331/426-331.html
  - Get Gardening! Video Series: https://www.youtube.com/playlist?list=PLnWrSBjZVh9f1DCZmjQAfJNVZdT8F8tYw
  - Vegetable Gardening in Containers: https://www.pubs.ext.vt.edu/426/426-336/426-336.html
- Square Foot Garden Planter: http://www.sfgplanner.com/#home