Giving your plants
their very best start.

"Nurturing seeds and cuttings to full sized plants grows not just the garden, but the gardener."

GRUBBYCUP

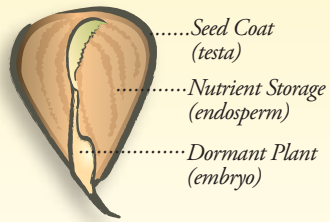
Your **Super Sprouter Heated Germination Kit** is designed to assist gardeners start seeds (seed germination) and root cuttings (cutting propagation). Expert growing tips by Grubbycup are included in this booklet to provide basic "quick start" information on both methods to help get you up and growing.

Along with your **Super Sprouter Heated Germination Kit**, the information in this booklet can help you get your seeds and cuttings not only to start, but also to thrive!

Seed Germination

Many garden flowers and vegetables are members of a group of plants called *spermatophytes,* which use seeds as part of their life cycle. Seeds are formed when pollen comes into contact with a receptive female flower organ. The resulting pollinated (fertilized) egg begins as a *zygote*, which then develops into a seed that is ready to germinate and grow.

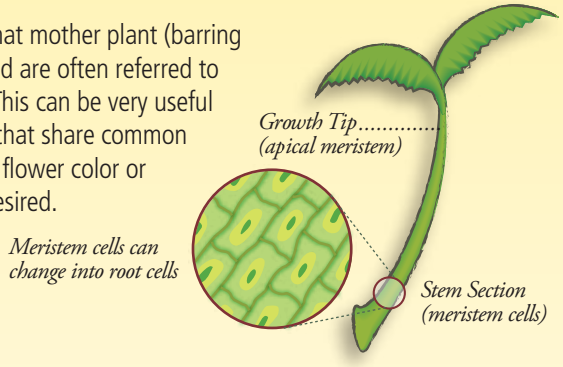
Seeds are amazing bits of biology that contain a tiny, dormant plant called an *embryo* and nutrient storage (*endosperm*) for it wrapped in a protective casing called a *seed coat (testa)*. The endosperm will supply the sprouting (germinating) embryo with all the energy and nutrients it needs until it has developed a root system to absorb them from a growing medium.



Cutting Propagation

Instead of starting from seed, many plants can be propagated by taking a cutting from a "mother plant." A cutting consists of both a growth tip (*apical meristem*) and a section of stem containing undifferentiated cells (*meristem cells*). When exposed to the proper environment, the meristem cells in the stem can be triggered to develop into roots, creating a new plant. Since cuttings are grown from cells taken from a mother plant, they will be genetically

identical to that mother plant (barring mutation), and are often referred to as "clones." This can be very useful when plants that share common traits such as flower color or gender are desired.



Which plant starting method do I choose: Seed Germination or Cutting Propagation?

SPEED: Depending on the type of plant, rooting cuttings may be faster or slower than starting from seed. For example, cuttings from tomatoes root very quickly, so starting them from cuttings is much faster than seeds. Woody plants however, tend to take longer to root from cuttings (some substantially longer) than starting from seed. If speed is a factor, be sure to research your chosen plant to determine which method is faster.

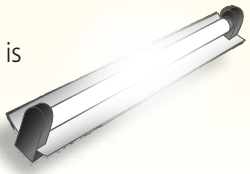
PLANT CHARACTERISTICS: Plants grown from the same seed stock may look identical, but they have far more genetic diversity than a set of cuttings taking from a single mother plant. If variety is desired, then use seeds. If uniform plant characteristics are desired, then cuttings are the better choice.

About your growing space. . .

Whether you're starting plants from seeds or cuttings, the growing environment you create is critical to your success!

TEMPERATURE: Most seeds germinate (and cuttings thrive) within an ambient temperature range of 75-80ºF (24-27ºC) depending on the plant species. Temperature stability is also important. Avoid sudden or drastic changes that can shock or kill young seedlings by providing them with a sheltered, draft-free growing space.

MOISTURE/HUMIDITY: When a viable seed is exposed to proper moisture and temperature (and in some cases, light) it will sprout. Moisture enters the seed through small holes (*micropyles*) which cause the embryo to swell and burst through the seed coat. Cuttings require special care with moisture levels until they develop a healthy root system, as they are very vulnerable to drying out and suffering terminal wilt. While seedlings and cuttings develop, humidity and moisture levels must be carefully monitored. Too dry and they will wilt and die; too wet and they will suffer from molds and root rot.



LIGHT: The T5 grow light included in your kit is adequate to get most seeds and cuttings off to a good start, as they generally do not need full intensity light until transplanting.

Ready? Let's get started with your seeds or cuttings!

Getting started with your 7" Super

YOU WILL ALSO NEED: Purchase cell inserts, plugs or soil separately. Many excellent choices are available from Super Sprouter and Sunlight Supply (see pages 17 - 22).

Sprouter Heated Germination Kit

1. T5 HIGH OUTPUT GROW LIGHT: This full spectrum, high output fluorescent grow light is ideal for seedlings and cuttings.

2. ULTRA CLEAR 7" DOME WITH LIGHT CHANNEL: Dome has light channels that securely hold the Super Sprouter T5 Grow Light in position.

3. 10"x20" DOUBLE THICK TRAY: Heavy duty tray conforms to industry-standard dimensions of 10"W x 20"L (often referred to as "10/20" trays).

4. SUPER SPROUTER SEEDLING HEAT MAT: Gently warms the growing tray 10-20ºF (5-10ºC) higher than typical ambient room temperatures of 65-72ºF (18-22ºC). Most seedlings and cuttings prefer ambient temperatures of 75-80ºF (24-27ºC), so if your growing space is already consistently in this range, DO NOT use the heat mat or the tray will get too warm. Also, note that it's not recommended to start plants in any space below 50ºF (10ºC), even with the heat mat.

5. CLONEX ROOTING GEL: Helps to stimulate the growth of root cells in cuttings (use directions on the package).

Tip: *If more exact temperature control is desired, either an analog or digital Heat Mat Thermostat is available from Super Sprouter (see page 19).*

2" Heated Germination Kit

#714152

INCLUDES:

- 2" Ultra Clear germination dome with adjustable vents.
- 10" x 21" Heat Mat.
- 72-cell round plug tray insert (media sold separately).
- 10"x20" watertight grow tray.

Simple Start® Micro Greenhouse Kit

PERFECT FOR SMALL SPACES

INCLUDES:

- 24-site tray insert pre-filled with Grodan® Rockwool Plugs.
- 4" Ultra Clear dome
- 8"x12" watertight grow tray.

#726430

7" Propagation Station®

INCLUDES:

- 7" vented humidity dome.
- 72-cell insert (media sold separately).
- Bottom 10"x20" watertight grow tray.
- 10" x 21" Seedling Heat Mat.
- Clonex® Rooting Gel packet.

#726400

Tip: *Whatever propagation kit you're using, make sure to keep it in an enclosed, draft-free area as close to ideal germination temperature as possible. DO NOT place outdoors in direct sun or in any cold, drafty location!*

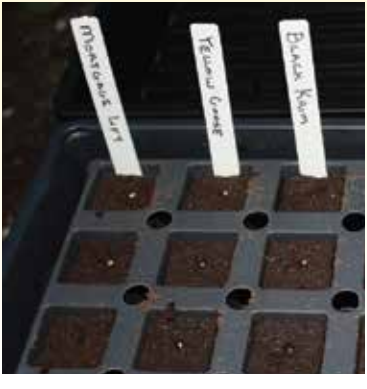
Starting with seeds

PREPARING YOUR SEEDS: Commercial seeds are usually ready to plant in plugs or soil straight from the packet (read seed packet instructions for best results). However, in some cases seeds that have been harvested and saved by the home gardener require some sort of pretreatment before use (i.e., saved tomato seeds are "fermented" as part of their seed saving process).

Seeds that have difficulty absorbing enough water to sprout may benefit from *scarification* (creating a nick or abrasion in the seed coat to help get water inside). Larger seeds can be carefully nicked with a sharp object, while smaller seeds can be placed in a matchbox with a piece of emery board and gently shaken.

Many seeds (scarafied or not) will benefit from being soaked in water for 12-24 hours before planting.

Another way to help moisture pass through the seed coat is to wrap the seeds in a moistened paper towel and store in a plastic bag kept in a warm location (75-80°F). As soon as the seeds sprout, they should be carefully transferred to a seedling grow medium. If this method is used, be sure to change the paper towel every few days to

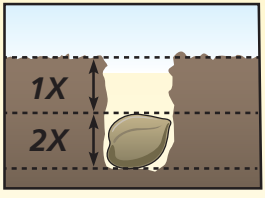


Organized seed tray with plant stakes and actively germinating sprouts.

discourage the growth of toxic mold and mildew.

When transferring sprouted seeds into plugs, care must be taken while inserting them into the pre-formed holes. Gently insert the root section into the hole, taking care not to kink or break the root. An alternative is to split the plug in half lengthwise and lay the rooted sprout between the halves. Leave approximately 1/4" of stem and leaflets exposed. Gently pack growing medium into the hole and around the top of the sprout before watering thoroughly.

PLANTING YOUR SEEDS: Plant seeds in plugs or soil to the correct depth specified on the seed packet. If no depth is specified, seeds can usually be planted to a depth of about 2-4 times the seed size. Cover seeds loosely with soil and water thoroughly.



Correct seed planting depth

The "10/20" tray included in your Super Sprouter Germination Kit is ideal for holding planted plugs or soil inserts. When combined with the heat mat and dome, you can maintain the ideal temperature and humidity for your seeds or sprouts to thrive.

Tip: *A crochet hook is excellent for handling seeds, making seed holes in soil, and perfect for working tender sprouts into plugs or soil.*

Starting with cuttings (cloning)

TAKING A CUTTING: With many plants, a branch that comes into contact with soil can send out roots instead of foliage. When a cutting is taken, the process is similar except the branch is separated from the parent plant and the cut end is placed in direct contact with the growing medium. As a general rule, here's how to take a cutting:

STEP 1: Select a healthy and vigorously growing parent plant.

STEP 2: With a clean, sharp instrument, cut off a growing tip from the parent plant with enough stem to root. Allow at least 2" (usually down to the next growth node). A clean, sharp instrument (such as sterilized scissors or scalpel) is used to minimize wound size on the parent plant and to reduce the risk of pathogen transmission.

STEP 3: Place the cut end of the cutting into a glass of clean water so it doesn't dry out while additional cuttings are taken. If taking cuttings from several parent plants, use one glass per parent, marking each with a rubber band and plant marker.

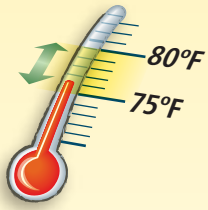
STEP 4: Once all cuttings have been collected, dip each cut end in Clonex Rooting Gel (according to directions) and gently thread the stem into the hole of a rooting plug or into the growing medium (being careful not to bend or damage the stem while inserting). Make sure the grow plugs or growing medium is moistened before use.

STEP 5: Place the cuttings in the cells of the tray, moving plant markers from the glasses of water to the tray cells.

STEP 6: Water lightly and cover with humidity dome.

STEP 7: Place the T5 lighting fixture on top of the dome, turn it on and put the entire assembly on a flat stable surface. Cuttings may take several days to a couple of weeks to root. BE PATIENT.

NOTE: If your growing area isn't within the optimal growing temperature range for cuttings of 75-80ºF (24-27ºC), use the heat mat. A Heat Mat thermostat is recommended (purchased separately) for those seeking exact temperature control.



EXAMPLE: Taking a Tomato Cutting

1. *Cut a growing tip from a healthy parent tomato plant.*

2. *Trim off the lowest branch to create an extra rooting node.*

Continued on next page

Taking a Tomato Cutting (continued)

45º angle and extra node exposes more area for root cell development.

3. *Trim off excess stem at about 45º a little below the extra rooting node.*

4. *Dip cuttings in Clonex Rooting Gel, covering extra node and 45º tip. Transfer to grow media.*

Fully rooted cuttings ready for transplanting.

Tip: *Woody plants tend to take longer to start from cuttings than herbaceous (non-woody) plants, and should be taken during the plant's dormant phase (usually fall or winter).*

Nurturing seedlings or cuttings

Check growth progress at least daily and water as needed. DO NOT OVER WATER! The growing medium should be kept moist, but not soggy. If humidity is too high (water is dripping down the inside of the dome), open the vents on top of the dome or set it slightly off center. Humidity that is too high encourages toxic fungal growth and pathogens.

Inspect plants frequently for under watering (wilting due to dry media). Generally, a mild under watering is less traumatic to plants than a mild over watering, but once a plant dries out enough it will not recover.

Plants should be removed from the starting trays and transplanted into larger containers before they grow large enough to become root bound.

This seedling is ready for transplanting.

Tip: ***STAY ORGANIZED!*** *Always use seed markers in each container (or row) to record the type of plant and to document the starting date. Record the same information on a calendar along with the estimated harvest time, then actual harvest date. This information can be helpful in planning the timing of future gardens.*

Things to know as you grow

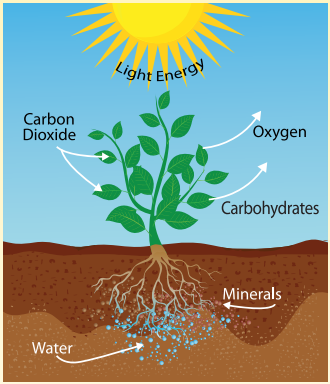
WATCH YOUR MOISTURE LEVELS! NEVER allow your growing medium to stay too wet for long. Unaerated, sitting moisture is an ideal environment for fungal growth such as "damping-off" and "root rot" and is usually caused by over watering. To prevent these problems, the media must be allowed to dry out slightly between waterings. Do not allow it to dry too much though, as the vulnerable sprouts and cuttings can quickly die if not watered enough. Cuttings are particularly sensitive to drying out until they develop roots. However, they too must not be kept too wet with unaerated water as they can suffer similar over-watering issues as seedlings.

LIGHT AND DARK PERIODS CONTROL FLOWERING: Plants that trigger flowering according to the length of dark periods are called "photoperiod dependent" and are often referred to as "short day" or "long day" flowering plants. Short day plant flowering is triggered by the long nights in fall, winter and spring, while a long day plant flowers only during the summer when nights are short. Other plants that flower regardless of the length of dark periods are called "day neutral."

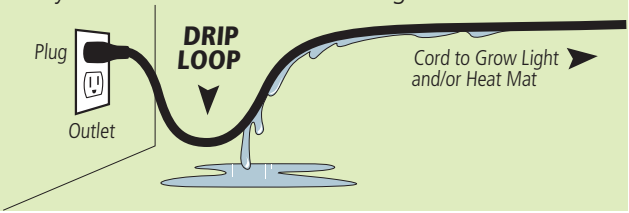
To control when a plant flowers, it is important to know whether it is a short, long or neutral day plant. For example, short day plants should be in darkness no more than 6 hours in every 24 hour period or they may begin to flower. In fact, 12 hours of

darkness is often enough to trigger flowering in many plants. Be sure to research the specific photoperiod requirements for your plants!

PHOTOSYNTHESIS is the process through which plants convert light, water and carbon dioxide into carbohydrates and oxygen. Light energy is collected by *chloroplasts* in leaves which contain *chlorophyll* pigments. These pigments appear green because they absorb red and violet-blue light, and reflect green light to our eyes. The chlorophyll pigment itself is made of carbon, nitrogen and magnesium, which is partly why carbon dioxide, nitrogen and magnesium are needed for plant growth.



Tip: ***SAFETY FIRST!*** *Always set up a "drip loop" between any power cord and the wall outlet. This will keep any water that may run down the cord from entering the outlet!*

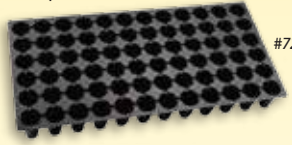


Optional products for your kit

For more information about Super Sprouter products and to find a retailer near you visit: www.SuperSprouter.com

SUPER SPROUTER 72 CELL PLUG INSERT TRAYS: Heavy duty 72 cell plug insert tray fits perfectly inside the 10x20 tray included in your kit (available with either round or square cells).

#726200



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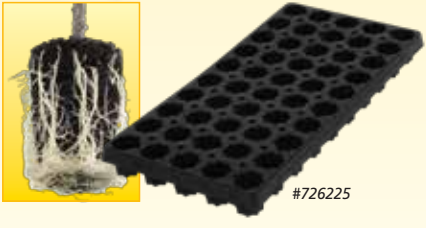
ROOT STAR TRAY INSERT: 50 cell plug insert directs roots down through its patent pending star pattern design. Durable 2 mil thickness.



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ADDITIONAL SUPER SPROUTER LIGHT TRACK DOMES & TRAYS: 4" or 7" Ultra Clear Light Track domes and various heavy duty 10x20 trays (with or without drain holes).

Even more growing options

SUPER SPROUTER SEEDLING HEAT MATS: Place heat mats under grow trays to warm root area 10-20ºF over ambient temperature to help improve the germination and rooting process. 1-Tray mat uses only 20 watts. 2-Tray mat uses 60 watts and allows placing trays end to end (instead of side by side). It's also daisy-chainable so you can hook up to 10 mats in series using only one outlet plug! Extra large 4-Tray heat mat uses 110 watts and allows you to warm a whopping 4 trays at once!

1-Tray Heat Mat
#726695

2-Tray Heat Mat
#726685

4-Tray Heat Mat
#726677

SUPER SPROUTER HEAT MAT THERMOSTATS: Digital or analog models help maintain extremely precise control of grow media temperature and are super easy to use. Plug heat mat into the thermostat, insert temperature probe into your media, set desired temperature and you're done! Digital unit constantly displays current soil temperature (analog model simply has a set dial). Both models have a temperature control range of 68-108ºF (20-42ºC) and include a 1 year warranty. *For control of heat mats only.*

Seedling Heat Mat Thermostat
#726702

Digital Heat Mat Thermostat
#726700

SUPER SPROUTER PERFECT PLUG® TRAY: 50-cell tray, insert and plugs are all included – just add seeds or cuttings!

#714157

SUPER SPROUTER PERFECT PLUG® REFILL 50-PACK: Can be used with any Super Sprouter Plug Insert Tray. Perfect Plugs feature a custom peat moss blend for a great mixture of moisture and aeration. Pre-drilled hole in each plug creates optimum stem to media contact.

Also available in 500-Pack (#714160)

MOTHER EARTH BioChar INSIDE

#714159

ROOT RAFT™ FLOATING GROW TRAY:

The easiest way to keep your seedlings and cuttings watered! No worries about watering because moisture is automatically wicked through plugs. Pre-filled floating tray insert with 55 plugs (reservoir tray included). Custom blended plugs for optimum stem-to-plug contact and superior wicking action.

#714161

MOTHER EARTH BioChar INSIDE

Root Raft 55-Refill Pack
#714163

ROOTCUBES GROWER FOAM GROW TRAY:

Engineered for high performance! Open-celled, water-absorbing foam is specifically designed for rapid root development. Packed pathogen-free to reduce disease problems. No handling of foam cubes with pre-filled tray. Foam provides optimum stem-to-plug contact.

#714164

Exclusive open-celled water-absorbing foam

For a huge selection of soil, rockwool or plug options visit
www.SunlightSupply.com

AQUA CLONE™ DEEP WATER CLONING SYSTEM:

The best way to start your clones!

#706557

- Fast and easy.
- Integrated finger cut outs to easily remove neoprene inserts.
- Elevated reservoir for temperature control.
- Easy lift handles built into the lid.
- 30 colored neoprene inserts included (24 + 6 extras).
- Aeration pump included.
- Instructions included.
- 90 day warranty.

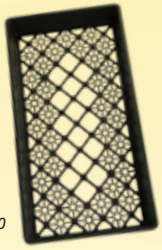
SUPER SPROUTER NEOPRENE INSERTS:

For gentle securing of cuttings and clones. Pre-slit for easy insertion with pre-drilled hole.

Solid Colors: 100/Pack

Multi Color: 192/Pack

SUPER SPROUTER MESH BOTTOM TRAY: An easy way to prevent over-watering. Insert this tray inside your 10x20 tray and place starter plugs (or rockwool sheet of 98) inside. Water your seedlings or cuttings and any excess will drain into the lower tray.



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SUPER SPROUTER SCALPELS: Extra sharp surgical steel blade minimizes stem damage when taking cuttings (sold individually wrapped in packs of 10).

#728000

***For more information about Super Sprouter products and to find a retailer near you visit:* www.SuperSprouter.com**

When you're ready to transplant…

If you're gardening year-round indoors, be sure to check out **www.SunlightSupply.com** for everything you need. You can browse the entire product line, find growing tips, helpful links, and find the retailer closest to you.

Check out the complete line of Super Sprouter products.

- Heat Mats
- Heat Mat Thermostats
- Cloning System & Inserts
- Germination & Propagation Kits
- Plug Trays and Refills
- Domes, Trays and MORE

Super Sprouter®

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