

## Care and Planting of Ginseng Seed and Roots

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**Propagation by Seed** -- Ginseng (*Panax quinquefolium*) is most commonly propagated by seed. The seeds require special handling because, to germinate, they must first be subjected to a long period of storage in a moist medium with a warm/cold treatment; a process known as stratification. Because of this requirement, ginseng seed normally does not germinate until the second spring following harvest of berries in the fall. Commercial seed suppliers store seed for a year and then market it in the fall as stratified seed. Fall planted, stratified ginseng seed will usually emerge the following April to June. Fresh, non-stratified (green) ginseng seed may be planted immediately after harvest of the berries. It will stratify naturally in the seedbed over the next year and a half, although loss to rodents and disease may be quite high. Plant stands will be greater if fresh seeds are stored and stratified in a secure container and planted in a protected site a year later. Whether the seed is green or stratified, it should be carefully inspected when obtained. If the seeds are soft, moldy or discolored, return them to the supplier for replacement.

Best results are obtained with fall seeding which can be done anytime before the soil freezes. Spring seeding is possible but involves greater risk since weather and soil conditions often delay planting. Stratified seed may begin to germinate as early as March. Handling seed that has already begun to sprout often damages the young plant. Holding the seed in the refrigerator may delay germination by a few days. In a few known instances, however, germination of stratified seed has been delayed for an extra year after the seed was held temporarily in a refrigerator. The reason for the delay is not understood. To prevent these problems, complete spring seeding by the first of April.

Have the seedbeds ready to plant when seeds arrive. If planting must be delayed, never allow the seeds to dry out. Seeds can be stored temporarily in a plastic bucket in a cool basement. Place a damp cloth on top of the seeds and cover the bucket with a loose fitting lid. Each day stir the seeds well or pour back and forth into a second container to aerate them and re-wet the cloth. Seed may also be held in a refrigerator for a few days before planting, but as noted above, this may delay germination. If fall planting cannot be completed before the ground freezes, store the seeds in a stratification unit until spring.

**Stratification** -- A simple stratification unit for small quantities of seed is a pouch made of lightweight screen and wire. For large quantities of seed, construct an 8-to 12-inch deep wooden box with a screen top and bottom. Regardless of the size or construction, design the container to allow for good drainage and to keep out rodents. Fill the container with alternating layers of seed and clean, moist sand, using at least twice the volume of sand as seed. Bury the pouch under 4 to 5 inches of loose soil in a shaded or north-facing area and cover with several inches of mulch. Bury the box the same way, but have the top of the box only 1 to 2 inches below the soil surface. Mark the location well.

Early the next spring open the container and check the seeds for decay, removing any that are soft. (If stratified seed was stored for the winter, plant them at this time.) Some seeds, particularly those that were harvested first, may germinate the first spring following harvest. Remove these seeds and plant them immediately. Stir the remaining seeds carefully to aerate them, make certain the sand is still moist and rebury the container. If soil conditions are extremely wet or dry, check the stratification unit periodically. Many seeds will enlarge and begin to open after a year in storage; this is a good indication that the seed are viable. In the fall, plant the seeds as stratified seed.

**Planting Seed** -- Plant seed one-fourth to one-half inch deep in a well prepared seed bed. Space seeds 1 to 6 inches apart in rows six to nine inches apart. There are approximately 8000 ginseng seeds per lb. To retain soil moisture and provide winter protection, cover seedbeds with 1 to 2 inches of mulch (e.g., shredded hardwood bark, leaves, weathered bark-sawdust, straw) immediately after planting.

**Propagation by Roots** -- Small ginseng roots can be easily transplanted and used as planting stock. Transplanting ensures a more uniform stand than seeding and reduces the time from planting to harvest. The price of roots, however, is substantially greater than that of seed. Carefully dig roots for transplanting after the tops of the plants have begun to die in late summer or early fall. Plant the roots as soon as possible after digging or receiving them. If they need to be held for only a day or two, put them in plastic bags in the refrigerator. Open the bags daily to aerate, check for mold and add a few drops of water if they start to feel dry. For longer temporary storage, cover the roots with four to six inches of damp peat or soil in a container and store in a cool place. If the roots cannot be planted that fall, store outdoors in loose, well-drained soil. Roots can also be over-wintered in damp sphagnum moss in a refrigerator. Store for 3 months or more below 45°F to satisfy the chilling requirement to break bud dormancy in the spring. When the chilling requirement has been satisfied, growth will begin, even if the roots are still in the refrigerator. Therefore, plant as soon as the soil can be worked in the spring.

**Planting Roots** -- Plant roots at a slight angle (30 to 45 degrees from the vertical) in well-prepared soil with the bud one inch below the soil surface. Plant three