

# Seeds - Found in all kits!

 <p>Alfalfa Seeds 1st</p>	 <p>Ryegrass Seeds Kindergarten, 1st,</p>	 <p>Wheat Seeds 1st, 5th</p>
 <p>Oat Seeds 1st,</p>	 <p>Marigolds 2nd</p>	 <p>Sunflower 2nd, 3rd</p>
 <p>Bush Beans 3rd</p>	 <p>Lima Beans 3rd</p>	 <p>Pea Seeds 3rd, 4th</p>
 <p>Popcorn 3rd, 4th</p>	 <p>Barley 4th</p>	 <p>Clover 4th</p>
 <p>Radish 4th</p>		

**What to do when the seeds arrive.** It's a good idea to test the seeds if the packages have been opened or if the date on the package is more than 2 years old. Plant five of each kind of seed in separate planter cups with soil according to the instructions in each folio. You should get 80% germination. If you get less than four seeds of any kind sprouting, order new seeds.

**Background.** The terrestrial plants used in the FOSS program are varieties that have been developed as food sources for humans and the animals humans raise: alfalfa (a legume), barley, corn, bean, pea, clover, radish, rye grass, wheat, oats, and sunflower. Students encounter them as seeds and grow them in a variety of environments. As mundane as these seeds are, they hold the most powerful message on earth: each can develop into a living replica of its progenitor from the genetic message carried in a single cell.

Seeds carry a tiny embryo of the new plant, and a food supply that will nourish and fuel the first few days of life. The two pulpy halves of the bean store the food for the seedling, and it is these same food sources that we use for food when we eat beans. These food storage units, the cotyledons, are found on every seed. Sometimes they are tiny, as in clover seeds, and sometimes they look strange, as in the wrinkly meat of the walnut, but the function is always the same. Plants that have two cotyledons are classified as dicots.

Far more important in terms of their contribution to feeding the world's population of humans are the plants that have only one cotyledon, the monocots. These include grasses, among others; all grains are grasses. The most important food plant is rice, followed by wheat, corn, and barley.

It must be remembered that seeds are living organisms in a dormant stage. Most seeds are capable of resting in this dormant stage for extended periods: 2 or 3 years for most plants, but up to several decades for others. When conditions of moisture and temperature are right, germination, or sprouting, occurs. The seed is capable of growth and development for several days in complete darkness, but after the energy from the cotyledon is exhausted, it must have light or it will starve to death. In the presence of light it can make its own food by photosynthesis.

In the classroom students will be anxious to plant seeds in order to observe one of the miracles of the world. They may not know how to plant, however, and they will need guidance from you. The general rule is that the smaller the seed, the shallower it is placed in the soil. Tiny seeds like clover can simply be spread on the surface of the soil. Large seeds like corn and peas, however, should be planted up to 1 cm (1/2") deep. The general rule for watering is to water when the surface of the soil looks and feels dry, and then only enough to moisten the soil, not to soak it. Students may ask which side of the seed is up. It really doesn't matter much because seeds are programmed so that the root goes down when it emerges from the seed and the shoot goes up.