

# Soil blocks notes



## What is a soil block?

- A block made out of lightly compressed potting soil. It serves as both the container and the growing medium for a transplant seedling.
- Despite being no more than a cube of growing medium, a soil block is not fragile. When first made, it is bound together by the fibrous nature of the moist ingredients. Once seeded, the roots of the young plant quickly fill the block and ensure its stability even when handled roughly. Soil blocks are the answer for a farm-produced seedling system that costs no more than the “soil” of which it is composed.

## Disadvantages

1. Probably the biggest disadvantage of using soil blocks is the up-front cost. I've seen a number of people recommend the little tongs/tweezers, which would be an extra expense. (I don't own them, but I could see how they might make handling blocks a bit faster.) Buying all of these tools (3/4", 2", 4", tongs) at once will probably cost \$200 or more.
2. A minor disadvantage is that all of the soil block recipes I've seen use peat. There's a learning curve: consistently making good blocks takes some practice. You've got to get the hang of mixing the soil to the proper consistency and then form the blocks correctly. It's not *difficult*, but it does take a bit of practice.

## Advantages

1. No containers (reduces ongoing cost, hassle and rubbish)
2. Nothing to clean or throw away. European growers sell bedding plants in blocks to customers, who transport them in their own containers. There is no plastic pot expense to the grower, the customer, or the environment.
3. Big time saver once you get the hang of it
4. Blocks can be made to accommodate any need. The block may have a small depression on the top in which a seed is planted, but blocks can also be made with a deep center hole in which to root cuttings. They can also be made with a large hole to transplant seedlings. Or they can be made with a hole precisely the size of a smaller block, so seedlings started in germination chamber in small blocks can be transplanted onto larger blocks.
5. If you want to get the biggest advantage, you'll want to have the ability to transplant from smaller blocks to larger blocks. For example, you'd start tomatoes in 2" blocks and then transplant up to 4" blocks.
6. Instead of the roots circling as they do upon reaching the wall of a container, they fill the block to the edges and wait. The air spaces between the blocks and the slight wall glazing caused by the block form keep the roots from

growing from one block to another. The edge roots remain poised for rapid outward growth. When transplanted to the field, the seedling quickly becomes established.

7. "Potting up" is really fast. Just drop the small block into the big block. No pricking out, no trying to squeeze plants out of little plastic containers.
8. Transplanting into the garden is really fast for the same reason.
9. You can make efficient use of space: if you use a heating mat, you can put a whole mess of 3/4" blocks onto the mat to germinate the seeds and then "pot up" the 3/4" blocks into 2" blocks.
10. It's gentler on the plants. Avoiding all that shock keeps plants growing steadily without setbacks. In theory this should give you higher quality plants that mature faster and yield better.
  - a. No competition
  - b. No root shock when transplanting.
  - c. Plants don't get root bound. The roots will be air pruned when they reach the edge of the blocks
  - d. No pricking out, no squeezing/pulling plants out of containers.
11. If you get good quality soil blocks, with proper care they're likely to last a lifetime.
12. You can get interchangeable pins (small indentation for crops with seeds the size of lettuce, cabbage, onion or tomato. Cubic pin for melon, squash, corn, peas, beans, dowel pin for cutting etc)

## Tips

1. Mix your own potting soil. You may be able to buy pre-mixed block soil, but it's fairly easy to do and you get to have control over the ingredients.
2. Set up a good watering system. The two problems related to watering are: (1) spraying the blocks with a hand sprayer is tedious and could lead to problems with fungal disease, and (2) if you pour water into the tray with a watering can (i.e. so that the stream of water makes contact with the blocks as you pour), you'll erode the blocks. Setting the blocks on a mesh screen so you can bottom-water seems like it will be ideal.
3. **Two factors influence choice of block size—the type of plant and the length of the intended growing period prior to transplanting.** For example, a larger block would be used for early sowings or where planting outside is likely to be delayed. A smaller block would suffice for short-duration propagation in summer and fall. The mini-block is used only as a germination block for starting seedlings.
4. If the plants are kept too long in the blocks, the roots do extend into neighboring blocks, so the plants should be transplanted before this happens.
5. Elliot Coleman: Obviously, the smaller the block, the less potting mix and greenhouse space is required (a 1½-inch block contains less than half the volume of a 2-inch block). But, in choosing between block sizes, the larger of the two is usually the safer choice. My preference is always for the larger block, first because I believe it is false economy to stint on the care of young plants. Their vigorous early growth is the foundation for later productivity. Second, I prefer not to rely on soluble feeding when the total nutrient package can be enclosed in the block from the start. All that is necessary when using the right size block and soil mix is to water the seedlings. Another factor justifying any extra volume of growing medium is the addition of organic matter to the soil. If lettuce is grown in 2-inch blocks and set out at a spacing of 12 by 12 inches, the amount of organic material in the blocks is the equivalent of applying 5 tons of compost per acre! Since peat is more than twice as valuable as manure for increasing long-term organic matter in the soil, the blocks are actually worth double their weight in manure. Where succession crops are grown, the soil-improving material added from transplanting alone can be substantial.

## **Nanoose Edibles Recipe**

1. 4 parts pasteurized soil (20 L. Bucket)
2. 1 part peat
3. 1 scoop lime
4. 1 scoop Organic Fertilizer

## **Nanoose Edibles Method**

1. Make sure the pasturised soil and peat is sifted to a small grain consistency (so blocks stay together and air pockets aren't too big)
2. Put all ingredients in wheelbarrow to mix
3. Slowly add water until the mix clumps together when you squeeze it (if it's too wet, they won't release from the soil block makers correctly, and they will also mold together, which defeats the purpose of soil blocks!)
4. Compress the soil into the soil block maker of choice and release onto the bottom of a meshed tray
5. When seeding, the seeds may need to be pressed down further into the block, to ensure they are covered by enough soil
6. Once seeded, add fine soil on top of the seeds (they must not be exposed to the air, they will not germinate)
7. Water lightly and consistently (take special care of watering the mini blocks, they dry out quickly on a heated bed). You may need to keep adding more sifted soil to the top of the blocks over the weeks

## **Where can I get soil blocks?**

In store at:

LeeValley Victoria (314 Wale Road Colwood), Victoria, British Columbia V9B 0J8

<http://www.leevalley.com/en/wood/page.aspx?p=69004>

Online at:

<https://www.westcoastseeds.com/collections/soil-blockers>

<https://www.johnnyseeds.com/tools-supplies/seed-starting-supplies/soil-block-makers/>

<https://www.groworganic.com/plant-growing-supplies/seed-starting/soil-blockers.html>

### Blocking Systems

**The ¾-inch block** made with the mini-blocker is used for starting seeds. With this small block, enormous quantities of modular seedlings can be germinated on a heating pad or in a germination chamber. This is especially useful for seeds that take a long time to germinate, because a minimum of space is used in the process.

**Mini-blocks** are effective because they can be handled as soon as you want to pot on the seedlings. The oft-repeated admonition to wait until the first true leaves appear before transplanting is wrong. Specific investigations by W.J.C. Lawrence, one of the early potting-soil researchers, have shown that the sooner young seedlings are potted on, the better is their eventual growth.

**The 1½-inch block** is used for short-duration transplants of standard crops (lettuce, brassicas) and as the seed block for cucumbers, melons, and artichokes by using the large seed pin. When fitted with a long dowel pin it makes an excellent block for rooting cuttings.

**The 2-inch block** is the standard for longer-duration transplants. When fitted with the ¾-inch cubic pin, it is used for germinating bean, pea, corn, or squash seeds and for the initial potting on of crops started in mini-blocks.

**The 3-inch block** fitted with a ¾-inch cubic pin offers the option to germinate many different field crops (squash, corn, cucumber, melon) when greenhouse space is not critical. It is also an ideal size for potting on asparagus seedlings started in mini-blocks.

**The 4-inch block** fitted with a 1½- or 2-inch cubic pin is the final home of artichoke, eggplant, pepper, and tomato seedlings. Because of its cubic shape, it has the same soil volume as a 6-inch pot and can grow exceptional plants of these crops to their five- to eight-week field transplant age.

### Blocking Mixes

When transplants are grown, whether in blocks or pots, their rooting area is limited. Therefore the soil in which they grow must be specially formulated to compensate for these restricted conditions. For soil blocks, this special growing medium is a *blocking mix*. **The composition of a blocking mix differs from an ordinary potting soil because of the unique requirements of block-making.** A blocking mix needs an extra fibrous material to withstand being watered to a paste consistency and then formed into blocks. Unmodified garden soil treated this way would become hard and impenetrable. A blocking mix also needs good water-holding ability, because the blocks are not enclosed by a nonporous container. The bulk ingredients for blocking mixes are peat, sand, soil, and compost. Store-bought mixes can also work, but most will contain chemical additives not allowed by many organic certification programs. If you can find a commercial peat-pearlite mix with no additives, you can supplement it with the soil, compost, and extra ingredients described below.

#### **Peat**

Peat is a partly decayed, moisture-absorbing plant residue found in bogs and swamps. It provides fiber and extra organic matter in a mix. All peats are not created equal, however, and quality can vary greatly. I recommend using the premium grade. Poor-quality peat contains a lot of sticks and is very dusty. The better-quality peats have more fiber and structure. Keep asking and searching your local garden suppliers until you can find good-quality peat moss. Very often a large greenhouse operation that makes its own mix will have access to a good product. The peat gives “body” to a block.

#### **Sand**

Sand or some similar granular substance is useful to “open up” the mix and provide more air porosity. A coarse sand with particles having a 1/8 to 1/16 inch diameter is the most effective. I prefer not to use vermiculite, as many commercial mixes do, because it is too light and tends to be crushed in the block-making process. If I want a lighter-weight mix I replace the sand with coarse perlite. Whatever the coarse product involved, adequate aeration is key to successful plant growth in any medium.

## **Compost and Soil**

Although most modern mediums no longer include any real soil, I have found both soil and compost to be important for plant growth in a mix. Together they replace the “loam” of the successful old-time potting mixtures. In combination with the other ingredients, they provide stable, sustained-release nutrition to the plants. I suspect the most valuable contribution of the soil may be to moderate any excess nutrients in the compost, thus giving more consistent results. Whatever the reason, with soil and compost included there is no need for supplemental feeding.

**Compost is the most important ingredient.** It is best taken from two-year-old heaps that are fine in texture and well decomposed. The compost heap must be carefully prepared for future use in potting soil. I use no animal manure in the potting-mix compost. I construct the heap with 2- to 6-inch layer of mixed garden waste (e.g. outer leaves, pea vines, weeds) covered with a sprinkling of topsoil and 2 to 3 inches of straw sprinkled with montmorillonite clay. The sequence is repeated until the heap is complete. The heap should be turned once the temperature rises and begins to decline so as to stimulate further decomposition. **The better the compost ingredient, the better the growth of the plants will be.**