

Complete Organic Fertilizer

Adapted from a section of Steve Solomon's latest how-to-veggie-garden book
Gardening When It Counts: Growing Food in Hard Times

Complete Organic Fertilizer (COF) is based upon principles developed by Dr. William Albrecht, chairman of the Department of Soils at the University of Missouri College of Agriculture. It's target balance of 5-5-1 (NPK) and the proper ratio of Ca to Mg is Albrechtian. If used as the fount of nutrition in the soil and IF additions of organic matter are not over done I believe the resultant produce will have very high BRIX.

Steve Solomon

The perfect fertilizer for home-garden vegetable crops would be a dry, odorless, finely-powdered completely organic material that would not burn leaves if sprinkled on them, would not poison plants or soil life if somewhat over-applied. It would slowly deliver to the plants about 5% nitrate-nitrogen (N); 5% phosphorus (P) in fairly available form and only 1% potassium (K, from kalium, its Latin name). It would also contain substantial and perfectly balanced amounts of calcium, magnesium and all the other essential minerals such as iodine, cobalt, manganese, boron, etc. It would release slowly so the nutrients didn't wash out of the topsoil with the first excessive irrigation or heavy rain.

Major nutrients in this ratio (5:5:1) with plenty of Ca and Mg (at a ratio of about 6:1) produce high levels of nutrition in the food we grow. You could sizeably increase yield by boosting potassium but the nutritional content of the veggies would decrease as the potassium (and the bulk it creates) went up. Most commercial growers, be they chemical or organic growers, push potassium to high levels because this element is inexpensive and makes them larger yields and higher profits. But this happens at the expense of the health of the consumer.

COF approaches my target of 5-5-1 but probably comes out more like 5-4-2 (NPK). If you include all the suggested ingredients, it also abundantly supplies all minor (or trace) nutrients.

Complete organic fertilizer is created by the gardener by mixing materials obtained in bulk sacks of 25-40 kg each. All materials are measured out by volume: that is by the scoop, bucket, jar, shovels-

full, etc. Proportions varying plus or minus 10% of the targeted volume will be exact enough; perfect measurement is not necessary. Do not attempt to make this formula by weight.

Blend as uniformly as possible:

4 parts any seedmeal

OR

3 parts any seedmeal and 1 part bloodmeal, or other high nitrogen source. This higher-nitrogen option is slightly better for leafy crops in spring.

WITH

¼ part agricultural (high calcium) lime, and
¼ part gypsum, and
½ part dolomite lime

PLUS

(for the very best results)

½ part soft rock phosphate or guano
½ to 1 part kelpmeal or greensand

Sources:

Titgemeier's Feed & Garden Store, 701 Western,
Toledo, Ohio, 419-243-3731

Ohio Earth Food, Inc., 330-877-9356,

www.ohioearthfood.com,

Peaceful Valley Farm Supply, 888-784-1722,

www.groworganic.com

Seedmeal, blood-and-bone meal, and the two sorts of limes are the most important ingredients. These alone will grow a great-looking garden. Guano and kelpmeal may be harder to obtain but including them adds considerable "fortitude" to the growing plants and greatly increases the nutritional content of your vegetables. Go as far down the list as you can afford to, but if you can't find the more exotic materials I wouldn't worry overly much. If money is a concern that stops you from obtaining kelp or guano, please consider this: in my opinion, a person can't spend too much money creating maximum nutrition in their food because any money spent

here saves heaps regarding health costs of all sorts - and how do you place a money value on the experience of suffering?

Seedmeals are normally used as animal feed supplements (mainly for horses and dairy cattle) and are a by-product of extracting oil from canola seeds, cotton seeds, coconut meat (called coprameal), flax seeds (linseedmeal), soybeans, etc. Most seedmeals analyze (NPK) about 6-4-2. The content of minor nutrients - calcium, magnesium and trace nutrient minerals - varies enormously from meal to meal and lot to lot, depending upon the soil quality that produced the oil seeds. Because most commercial farm soils are severely depleted, most seedmeals in commercial trade are probably rather poor in terms of supplying nutrients other than NPK. Use whichever type of seedmeal is the cheapest because the largest portion of the cost of distantly-produced meals is usually freight. Sources are animal feed dealers and farm stores, usually in 40 kg sacks. Seedmeals are stable and will store for years if kept dry and protected from mice in a metal rubbish bin.

Lime(s). There are three useful sorts: "agricultural (or high calcium) lime," which is calcium carbonate (30% calcium and 4% magnesium), "dolomitic lime," contains both calcium and magnesium carbonates, usually in more or less equal amounts (I have seen figures of 21% Ca and 12% Mg), and "gypsum," calcium sulphate, included as insurance against sulfur deficiency. (Do not use quicklime, burnt lime, hydrated lime, or other "hot" limes.) If you had to choose only one lime you're probably better off using dolomite, but best off by far is using a mixture of the three types. Lime is not expensive if bought in large sacks. The whole subject of liming gets DEEP! I cannot deal with the complexity in this short piece. The bottom line is that even if your garden has been limed, even if by soil test its pH is quite acceptable, use lime(s) in the fertilizer mix because vegetables need calcium and magnesium as nutrients, and in the right balance, which is about 4-8 parts calcium to each part of magnesium. That is why I stress using a mixture of two sorts of limes.

Soft rock phosphate or guano slightly boosts phosphorus levels and is also rich in trace elements. Guano is available from Peaceful Valley, which has lots of other interesting items.

Kelpmeal seems quite expensive but a 50 lb sack will last the average gardener many years and will supply a wide range of trace minerals and growth regulators that act like plant vitamins, increasing plant resistance to cold, frost and other stresses.

Preplant: atop each 100 square feet of raised bed or each 200 feet of planting row, uniformly broadcast 4 to 6 quarts of fertilizer. (1 to 1 ½ cups COF for 4 sq. ft. (2' X 2') of garden) Hoe or spade the fertilizer in, blending well. If you "no dig" your garden, just spread it. Soil animals will eat it and mix it in for you. This amount provides a degree of fertility sufficient to grow carrots, beets, parsley, beans, peas, perhaps enough for leaf lettuce, and other 'low-demand' vegetables. Clay soil usually needs a generous six quarts per 100 sq. ft. for the first few years until it has become saturated with nutrients; then it'll need less to maintain itself.

Side dress: A few weeks after seedlings have come up, sprinkle small amounts of fertilizer around them, thinly covering the area that the root system will grow into over the next few weeks. As the plants grow, side dress every three or four weeks, placing each dusting further from the plants' centres. Each side dressing will take a bit more fertilizer than the last. As a rough guide on how much to use, side dress about four to six additional quarts per 100 sq. ft. of bed, total, during a full crop cycle.

Side dress anything you want to make grow FAST, like broccoli, tomatoes, capsicums, pumpkins, etc. If an application provokes no growth response, side dressing wasn't needed so do it no more.

[Kris adds: Adequate levels of carbon in the soil and good biological activity are also essential for the best results]

2013 - Steve Solomon publishes a new book, *The Intelligent Gardener*, with new ideas on growing nutrient-dense food through proper soil-remineralization.