



## GROW BIOINTENSIVE® Agriculture A How-To Guide

In short, GROW BIOINTENSIVE® agriculture is less dependent on expensive external inputs, is space intensive, water conserving, depends on less labor, and creates minimal pest problems. Farmers practicing the method are likely to have well-balanced nutritious food, better incomes and are prone to less risk. The following are the eight key steps to GROW BIOINTENSIVE® agriculture as defined by John Jeavons, Director of the GROW BIOINTENSIVE® Mini-Farming program for Ecology Action.

The program outlined below is only an outline of the system and further study should be done using John Jeavons' book "How to Grow More Vegetables" or by taking a course at Ecology Action in California in the US or at Manor House in Kenya.

### 1. DOUBLE-DUG, RAISED BEDS

In this method, crops are planted in beds that are "double-dug". The farmer digs 12 inches down and then loosens the soil to a depth of 24 inches. This loose soil enables plant roots to penetrate easily and allows more air in the soil, creating a "raised-bed" effect. John Jeavons' demonstrates an Aikido-style movement that makes double-digging almost effortless:

### 2. ORGANIC FERTILIZERS

Chemical fertilizers have been shown to deplete the soil over time, and as soil quality deteriorates, increasing amounts of chemical/fertilizers are needed to sustain yields, harming soil structure and microbiotic life. Organic fertilizers are necessary to maintain the health and vigor of soils that are farmed using intensive planting. When properly applied these fertilizers improve soil quality. As the soil's health improves, optimum plant health is maintained, and garden yields are maximized.

There are a basket of choices of organic fertilizers that can be categorized as manure-based, legume-based or biomass-based. Manure-based fertilizers include aged manure, manure tea, earthworm casting, cow-horn manure, etc. The Legume-based fertilizers include intercropping with legumes (nitrogen-fixing-plants like peas, beans, leucaena, sesbania, etc.). Biomass-based fertilizers include compost (pit compost, heap compost, basket compost and container compost), stinging nettle manure, etc.

Additives like wood ash, bone meal, eggshells, etc. contribute greatly to organic fertilization, by producing potash, phosphorus, calcium and iron if we allow the soil micro-organisms to work on them.

Add "the same appropriate amount of organic fertilizers" plus 8 cubic feet of composted organic matter without soil per 100 square feet.

### 3. INTENSIVE PLANTING

Seeds or seedlings are planted in 3- to 6-foot-wide beds using a hexagonal spacing. Each plant is placed the same distance from all plants around it so that when the plants mature, their leaves touch. This provides a "mini-climate" under the leaves that retains moisture, protects the valuable microbiotic life of the soil, retards weed growth, and facilitates higher yields.

### 4. COMPANION PLANTING

Research has shown that many plants grow better when near certain other plants. Green beans and strawberries, for instance, thrive better when they are grown together. Some plants are useful in repelling pests, while others attract beneficial insect life. Corn provides shade to cucumbers, and fast-maturing radishes grow well in between slower-growing carrots.

Borage, for example, helps control tomato worms while its blue flowers attract bees. Also, many wild plants have a healthy effect on the soil; their deep roots loosen the subsoil and bring up previously unavailable trace minerals and nutrients. Use of companion planting aids the farmer in producing fine-quality food crops and helps create and maintain a healthy, vibrant soil.

### 5. CARBON FARMING

Soil fertility is facilitated by planting approximately 60% of the growing area in dual-purpose seed and grain crops. These key crops produce a large amount of carbonaceous material per unit of area, which is used to build compost for improving and maintaining the soil ecosystem's microbial life.

These crops also produce a significant amount of calories. Corn, wheat, amaranth, millet and oats are some of the crops that make this possible. Growing compost materials on the farm will be important in the future, since large amounts of organic matter and nutrients are currently being "mined" from soil in one area and sent away to improve the soil of farms in other areas. Instead we can produce more organic matter and retain more nutrients on a "closed-system" basis.

### 6. CALORIE FARMING

Growing a year's food supply means planting high-calorie, space-efficient root crops in 30% of the growing area. These crops include potatoes, sweet potatoes,

salsify, burdock, garlic and parsnips.

## 7. THE USE OF OPEN-POLLINATED SEEDS

Use normal open-pollinated native seeds for excellent results. Special hybrids are not needed in healthy soil. In this way a wonderful variety can be grown while the world's genetic diversity is preserved.

## 8. A WHOLE FARMING METHOD

COMPONENTS OF THIS METHOD MUST ALL BE USED TOGETHER FOR THE OPTIMUM EFFECT! If you do not use all of the components together, the soil can be rapidly depleted because of the method's high yields.

The following are important notes about farming that are not exclusive to the GROW BIOINTENSIVE agriculture method:

### PEST CONTROL

Fight harmful insects through beneficial insects and animals such as ladybirds, praying mantis, wasps, lizards, birds, etc. Apply natural pesticides such as pepper, tobacco, pyrethrum, stinging nettle, etc.

### WATER CONSERVATION

There are three major categories of activities aimed at the rational use of water. The first is harvesting water during the season of plenty, for use when water availability is being stretched - roof water harvesting, ponds and artificial lakes are some examples. The second is to conserve the available water (mulching, shading, precision planting, etc). The third is recycling water or reusing it for a second and third time depending on your previous use.

Edited by Village Volunteers using the following resources:

<http://www.growbiointensive.org/>

<http://www.ruaf.org/system/files?file=Chapter%2011.pdf>

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