

## JOHN'S CORNER

### Organic Fertilizers and Nutrients – 8. Cotton Seed Meal

*By John Ferguson*

Cotton seed meal has been used as a natural fertilizer for decades with great results and is the preferred fertilizer by many gardeners. As you might have guessed cottonseed meal is a by-product of the cotton farming industry. After the cotton has been picked and the cotton fiber removed we have the seeds left over. These seeds are crushed and the oil is extracted. The remaining material is called cottonseed meal. This meal can be used as a fertilizer or as animal feed (however it is toxic to some animals).

As a plant species, cotton is a member of the genus *Gossypium* of which several varieties are grown commercially for the fiber. The most common variety is *Gossypium hirsutum* an upland cotton, native to Central America, Mexico, the Caribbean and southern Florida. This species is responsible for 90% of the world's cotton production. Cotton as a plant species is a heavy feeder of minerals and nutrients from the soil which become concentrated in its seeds. After processing cottonseed meal will have a 6-2-2 NPK ratio plus many minor nutrients. It also contains many carbon compounds that are food for the beneficial microbes, hence it stimulates growth of these desirable species.

Cotton seed meal is a natural acidifier hence it is often the preferred fertilizer on azaleas, camellias, blueberries and other acid loving plants.

For most plants from turf grass to roses, one typically uses 8-10 pounds per 100 square feet. However this is not critical as it does not leach out or burn plants.

Like many other organic fertilizers studies have shown that cotton seed meal promotes better root development than same amount of nutrients in synthetic form (artificial fertilizers).



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A problem with cottonseed meal is that some types may contain high levels of arsenic. For decades arsenic based chemicals were used as a defoliant before harvesting the cotton bolls. Arsenic based pesticides were also used to control boll weevils. As a result, these arsenic compounds built up in the soil after years of use, to high levels. They are no longer used but the arsenic remains in the soil. As a result each new crop of cotton absorbs some of the arsenic which ends up in the meal. Arsenic is a known carcinogen and heavy metal that is linked to many health problems. When animals are fed cottonseed meal the arsenic builds up in their tissues and in us when we eat the meat. Numerous studies have linked arsenic to health problems from dementia to many forms of cancer to behavioral problems in children.

Note: The arsenic level in cottonseed meal is often far less than what is found in many artificial fertilizers.

Another new problem has emerged as more farmers (50%) grow GE (genetically engineered) cotton that produces the BT (bacillus thuringiensis) toxin in all parts of the plant. Hence the meal is also contaminated and can kill many good insects and microbes.

The good news is that more and more consumers are demanding organically raised cotton hence organic cotton meal is becoming available.

#### SUMMARY:

Cotton seed meal can be a great organic fertilizer IF it is from organically grown cotton. If the meal is not organic it can still be beneficial, however I would not use it on food crops and limit its usage to flowers and other perennials. It would also be a good idea to rotate cottonseed meal with other organic fertilizers to ensure the soil is getting a balance of nutrients.

#### PROS:

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- contains major and minor elements
- stimulates the rapid growth of good microbes in the soil
- contains some carbon as an energy source for the microbes
- increases microbial diversity
- does not burn plants as toxic chemical fertilizers
- natural acidifier of soil
- aerates heavy tight clay soils
- helps light sandy soils hold moisture
- increases soil organic matter
- naturally low in salts
- does not contain toxic fillers
- recycles a waste product to beneficial use
- does not leach creating water pollution

**CONS:**

- may contain some arsenic
- may contain pesticides residues
- may contain BT poison from genetically modified varieties
- not approved for organic production

COMMENT: I often mention the dangers of arsenic and heavy metals in various products. However, the single largest sources of heavy metals is from artificial fertilizers where heavy metals are often added as fillers. If one buys a 10-10-10 synthetic fertilizer have you ever wondered what is in the other 70%! The following book is about the usage of heavy metals in artificial fertilizers, its discovery and the government attempts to cover it up.

Fateful Harvest by Duff Wilson, 2001, Harper Collins Publisher, ISBN 0-06-019369-7, A history of how hazardous waste is disposed of in synthetic fertilizers and ends up contaminating the food supply. Wilson was an investigative reporter for the Seattle Times Newspaper and published a series of articles from 1997-1999.

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