

# AGGRAND®

# The Gardening Guide

*Whether you're an experienced gardener or a beginner, a nurseryman, landscaper, or farmer, AGGRAND products work by stimulating the biological activity in the soil to provide a continuous release of nutrients as the plants need them.*

*AGGRAND products are useful during soil preparation, planting, transplanting and plant growth. In addition to the macronutrients, Nitrogen, Phosphorus and Potassium (N-P-K), AGGRAND products contain micronutrients, growth hormones, chelating agents, vitamins and humus that provide a balanced nutritional program for plants and the creatures in the soil.*

*AGGRAND products are different from many other products. They are formulated to give excellent results when used for foliar feeding and root feeding. In addition, they build the soil for prolific root growth and enhanced top growth. The highest quality ingredients are used in AGGRAND products to give the best results. AGGRAND Technical Service Department is available at (715) 399-6419. Dedicated technicians work with clients to develop and fine tune their farming and gardening practices according to their specific needs.*

*This guide shows first-time AGGRAND users and AGGRAND veterans alike how to get the most out of the products.*

*To obtain the most comprehensive understanding of the nutrient levels and crop requirements of a particular soil, AGGRAND recommends a soil analysis before determining a fertilization program. Soil Analysis Kits (G1374) are available from AGGRAND for \$3.*

## Natural Fertilizer 4-3-3 Application on Bedding Plants

**1** For commercial applications, AGGRAND Natural Fertilizer 4-3-3 is applied to the soil at a 200:1 (water to fertilizer) ratio through a standard injection system when plants reach 2 to 3 true leaves.

The ratio can be decreased to 100:1 for more demanding plant types as the growth rate increases. AGGRAND 4-3-3 also may be diluted in a watering can to 1 to 3 ounces per gallon of water (higher rates as growth increases related to crop demands). Soil applications: AGGRAND 4-3-3 should be applied at 10 to 14



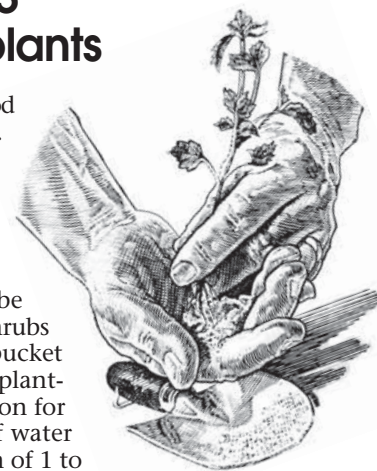
day intervals (apply more frequently when non-soil mixes are used). Every four weeks the salts should be leached from the media by flushing the containers with fresh water. After leaching, fertilize with 4-3-3. Additional calcium, phosphorus and potassium are needed at planting. Mix in 2 to 3 ounces of AGGRAND Natural Liquid Bonemeal 0-12-0 (NBM) and 1 to 2 ounces AGGRAND Natural Kelp and Sulfate of Potash 0-0-8 (NKP) with the 4-3-3 to provide more nutrients.

Foliar applications: A fine mist is applied to bedding plants for additional uptake of nutrients. Apply one to two ounces of AGGRAND 4-3-3 per gallon of water at 14 to 21 day intervals after the plants reach 3 to 4 true leaves.

## Natural Fertilizer 4-3-3 Application on Transplants

**2** Transplanting is a stressful period for young bedding plants. Minimizing transplant shock keeps plants growing vigorously, avoiding unnecessary setbacks which can delay flowering and reduce yields.

AGGRAND Natural Fertilizer should be used for watering in small transplants. Shrubs and trees can be soaked overnight in a bucket of AGGRAND 4-3-3 or 0-0-8 before transplanting. Use a mixture of one ounce per gallon for soaking and 2 to 3 ounces per gallon of water for watering in transplants. The addition of 1 to 2 ounces of AGGRAND 0-12-0 and ½ to 1 ounce of AGGRAND 0-0-8 to the solution to increase phosphorus and potassium availability when watering in the transplants will aid the fertilizer in long term root development.



- Avoid transplanting during the heat of the day to avoid root desiccation (drying out).
- Cloudy weather is the best time to transplant.
- Keep soil moist until plant root systems become well-established.

## Natural Fertilizer 4-3-3 Foliar Applications

**3** While plants do take up nutrients through their roots, they can't always meet all of their nutrient demands that way. For example, if soil pH is higher (more alkaline) or lower (more acidic) than the optimum range needed for plant growth, then essential nutrients become unavailable.

Foliar feeding is a very efficient way of providing nutrients during periods of peak nutrient demands and in situations where the soil pH level is creating a nutrient deficiency without sacrificing performance. AGGRAND 4-3-3 and AGGRAND 0-0-8 contain concentrated kelp extract. Kelp provides a wide array of plant nutrients, chelating agents and plant hormones. Kelp promotes drought, heat, and cold tolerance of vegetable and flowers. They are particularly effective when applied as foliar sprays.

With foliar applications growers adopt one of two applications methods: a calendar based approach where feeding begins on a certain date and continues at set intervals throughout the growing season, or an approach based on the plant's developmental stages in which reaching a critical stage (i.e. bud formation, first bloom, fruit set, etc.) is the cue for application. When feeding foliarly, apply enough fertilizer solution to wet the foliage.

Effectiveness of foliar applications is increased by raising the fertilizer pH to 7.0 to promote vegetative growth and 6.0 to promote flowering and fruit formation. After mixing the fertilizer with water, test the pH with litmus paper. Add baking soda or hydrated lime one-half teaspoon at a time to raise the pH to the specified level or add apple cider vinegar 1 teaspoon at a time to lower the pH to the specified level. The addition of a surfactant (spreader-sticker) to the spray mix also increases the effectiveness of foliar applications. Add 2 to 4 tablespoons to each gallon of spray mix and keep well-agitated.

Do not apply AGGRAND Fertilizers in direct sunlight or immediately before or after rainfall or irrigation.

## Natural Fertilizer 4-3-3 Deep Root Applications

**4** For trees and shrubs, a surface application of fertilizer may be used up by the lawn before it can penetrate down into the root zone of these woody perennials. Deep root feeding below the root zone of the grass effectively provides nutrients to trees and shrubs. The ideal fertilizer for deep root feeding is a liquid, low salt product containing chelated macro and micronutrients that releases slowly into the root zone.

Several application methods are used for deep root feeding. All of these methods involve penetrating the root zone around the drip line of the tree or shrub (the feeder roots form a circle 2 to 4 ft. wide around the drip line). One method is to drill a number of holes in the ground 6" to 12" deep and pour the fertilizer into them. A second method is to rototill around the drip line just deep enough (2" to 3") to break up the sod but not disturb many of the tree's or shrub's roots. Then use a soaker hose to apply the fertilizer. A third method is to apply the fertilizer without any previous tillage. A longer time must be allowed to effectively penetrate the root zone. The final method uses a hollow tree spike which is pushed

down into the root zone. The fertilizer is injected through the spike. It may be impractical to use this method in highly compacted soils; in this situation it is better to drill holes or use tillage.

Tree and shrub fertilizers are applied in the early spring or in the fall. When performing deep root feeding by injection or through bored holes on trees and shrubs, use a grid pattern, with points every 2 or 3 feet, starting at least a foot away from the base of the tree and extending one or two feet outside the drip line. AGGRAND 4-3-3 should be applied at 4 to 32 ounces per tree. The ratio of water to fertilizer is 4 oz. fertilizer to one gallon of water for hand watering down to one half ounce per gallon for injection and soaker hoses. Younger trees and shrubs and those in sandy soils need half the above rate applied both spring and fall.

AGGRAND 0-12-0 and 0-0-8 may be mixed with the 4-3-3 to provide additional calcium, phosphorus, and potassium. Apply 2 to 16 ounces of 0-12-0 and 1 to 8 ounces of 0-0-8 along with the 4-3-3 to supply additional nutrients.



## Natural Fertilizer Soil Applications

**5** Gardens need to be tilled in the spring and fall. Fall tillage combined with a fertilizer application aids in the breakdown of crop residue and provides readily available nutrients from the fertilizer and decomposed organic matter by the next year. Spring tillage with a fertilizer application provides some readily available nutrients, but more of the nitrogen is locked up through the decomposition of plant residue. Either way, fertilizer should be applied at planting time for optimum results. AGGRAND 4-3-3, 0-12-0 and 0-0-8 can be applied either time. A soil test of your garden area is beneficial in determining the most useful fertilizer combination to use. For most gardens one quart each of AGGRAND 4-3-3, 0-12-0 and 0-0-8 tilled into 1,000 to 2,000 square feet of garden is sufficient.

Using AGGRAND products during spring soil preparation and fall tillage is straightforward. In spring the applications are made by spray broadcasting the AGGRAND products before the final trip over the garden and allowing them to dry before tilling in the fertilizer. In the fall the soil should not be tilled finely or deeply, but the fertilizer application is still made before the final pass with the tiller.

Another way AGGRAND products are used for garden crops is banding the fertilizer in a trench near the seed. The best way to band fertilizer is to dig a trench slightly to one side and beneath where the seed will be planted (1" to 2" below and 2" to 4" to the side of the seeds). The fertilizer, mixed with water, is then dribbled into the trench, after which the trench is covered and a furrow is formed next to it for the seed. Finally, fertilizer is applied to some crops by broadcasting it before or after planting to the seedbed. Following are some guidelines for applying fertilizer during critical development stages on various crops.

AGGRAND products may also be applied on a calendar-based approach (i.e. every week, bi-weekly, etc.). Rates given for soil applications are for monthly fertilizations. When fertilizing more often reduce the concentration of the mix accordingly.

## Root Crops

### (i.e. carrots, beets, turnips)

**1st application:** Broadcast 2-3 oz. 4-3-3, 2-3 oz. 0-12-0, and 1-2 oz. 0-0-8 in 1 gal. of water on 100 sq. ft. after planting.

**2nd application:** Foliar feed 4-6 weeks after emergence with 2 oz. 4-3-3 in 1 gal. of water.

**3rd application:** Repeat foliar application 3-4 weeks later.

**Soil applications:** Use 2-3 oz. 4-3-3, 2-3 oz. Liquid Lime, and 1-2 oz. 0-0-8 in 1 gal. of water on 10-20 ft. of row or 30-100 sq. ft.

## Tubers and Tuberous Root Crops (i.e. potato, sweet potato, yam)

**1st application:** Band 3-4 oz. 4-3-3, 2-3 oz. 0-12-0, and 1-2 oz. 0-0-8 in 1 gal. of water on 10-20 ft. of row during planting.

**2nd application:** Foliar feed 2 weeks after emergence with 2-3 oz. 4-3-3 and 1-2 oz. Liquid Lime in 1 gal. of water.

**3rd application:** Repeat 2nd application 2 weeks later (for baby red potatoes use an additional application 4 weeks later).

**4th application:** Repeat foliar application 6 weeks after 3rd application.

**Soil application:** Use 2-3 oz. 4-3-3, 2-3 oz. Liquid Lime, and 1-2 oz. 0-0-8 in 1 gal. of water on 10-15 ft. of row.

## Leaf Crops

### (i.e. lettuce, celery, spinach)

**1st application:** Band 3-4 oz. 4-3-3 and 1-2 oz. 0-0-8 in 1 gal. of water on 10-20 ft. of row or 30-60 sq. ft. during planting.

**2nd application:** Foliar feed 2-3 weeks after transplanting with 2 oz. 4-3-3 in one gal. of water.

**3rd application:** Repeat 2nd application every 3-4 weeks until harvest.

**Soil applications:** Use 2-3 oz. 4-3-3 and 2-3 oz. Liquid Lime in 1 gal. of water on 15-20 ft. of row or 45-60 sq. ft.

## Cole Crops

### (i.e. cabbage, broccoli, cauliflower)

**1st application:** Broadcast 3-4 oz. 4-3-3, in one gal. of water on 100 sq. ft. before final seedbed application.

**2nd application:** Foliar feed 2-3 weeks after transplanting with 2 oz. 4-3-3 in one gal. of water.

**3rd application:** Repeat foliar feed when plants begin to head.

**Soil applications:** Use 2-3 oz. 4-3-3, 2-3 oz. Liquid Lime per gal. of water on 5-10 sq. ft. of row.

## Solanaceous Crops

### (i.e. tomato, pepper, eggplant)

**1st application:** Band 3-4 oz. 4-3-3, 3-4 oz. 0-12-0, and 1-2 oz. 0-0-8 in 1 gal. of water on 10-20 ft. of row before transplanting.

**2nd application:** Foliar feed at 1st bloom with 2 oz. 4-3-3 and 1-2 oz. 0-12-0 in 1 gal. of water.

**3rd application:** Repeat 2nd application at full bloom. Substitute Liquid Lime for 0-12-0.

**4th application:** Foliar feed during fruit fill with 1-2 oz. 0-0-8 in 1 gal. of water on 10-15 ft. of row.

**Soil application:** Use 2-3 oz. 4-3-3, 2-3 oz. Liquid Lime, and 1-2 oz. 0-0-8 in 1 gal. of water on 10-15 ft. of row.

## Legumes

### (i.e. beans, peas, lima beans)

**1st application:** Band 1-2 oz. 4-3-3, 2-3 oz. 0-12-0, and 1-2 oz. 0-0-8 in 1 gal. of water on 20-30 ft. of row during planting.

**2nd application:** Foliar feed 1 week before 1st bloom (when terminal leaves are shiny) with 1-2 oz. 4-3-3 and 1-2 oz. 0-0-8 in 1 gal. of water.

**3rd application:** Repeat foliar feed before 2nd flush of blooms on string beans.

**Soil application:** Use 1-2 oz. 4-3-3, 1-2 oz. 0-12-0, and 1-2 oz. 0-0-8 in 1 gal. of water on 15-20 ft. of row.

## Cucurbits

### (i.e. cucumber, squash, melon)

**1st application:** Band 2-3 oz. 4-3-3, 1-2 oz. 0-12-0, and 1-2 oz. 0-0-8 in 1 gal. of water on 15-20 ft. of row or 4 hills at planting.

**2nd application:** Foliar feed 2-3 weeks after emergence with 2-3 oz. 4-3-3 in 1 gal. of water.

**3rd application:** Repeat 2nd application when plants begin to run.

**4th application:** Repeat 2nd application when the first bloom appears.

**5th application:** Foliar feed during fruit fill up to 2 weeks before final harvest with 1-2 oz. 0-0-8 in 1 gal. of water.

**Soil applications:** Use 2-3 oz. 4-3-3 in 1 gal. of water on 10-20 ft. of row or 50-100 sq. ft.

## Small Fruits

### Strawberry:

**1st application:** Foliar feed in early spring after leaf formation with 2-3 oz. 4-3-3 in 1 gal. of water (only if leaves are light green to yellow) otherwise use 1-2 oz. 0-0-8.

**2nd application:** Foliar feed in late summer with 1-2 oz. 4-3-3 in 1 gal. of water.

**New Planting:** Broadcast 3-4 oz. 4-3-3, 3-4 oz. 0-12-0, and 1-2 oz. 0-0-8 in 1 gal. of water on 100 sq. ft. before final seedbed preparation. Water in transplants with 2-3 oz. 4-3-3 or 1-2 oz. 0-0-8 in 1 gal. of water on 10-15 ft. of row.

### Blueberry:

**1st application:** Broadcast 2-3 oz. 4-3-3 in 1 gal. of water on 100 sq. ft. (on mulch around plants) as buds begin to swell in spring.

**2nd application:** Repeat 1st application only if leaves are light green or one year old stems less than 6 inches in length.

**3rd application:** Foliar feed in late summer after harvest with 1-2 oz. 4-3-3 in 1 gal. of water on bushes with low vigor as explained under 2nd application above.

**New Planting:** Broadcast 1-2 oz. 4-3-3 in 1 gal. of water on 100 sq. ft. (on mulch around bushes) after transplanting when new growth appears.

### Raspberry:

**1st application:** Broadcast 2-3 oz. 4-3-3 and 1-2 oz. 0-0-8 in 1 gal. of water on 100 sq. ft. in early spring.

**2nd application:** Repeat 1st application in monthly intervals up to harvest.

**3rd application:** Broadcast 2-3 oz. 4-3-3, 2-3 oz. 0-12-0, 1-2 oz. 0-0-8 on 100 sq. ft. after final harvest. Till into soil with organic matter or cover crop.

**New Planting:** Use same rates given under 3rd application.

### Grapes:

**1st application:** Broadcast 2-3 oz. 4-3-3 and 1-2 oz. 0-0-8 in 1 gal. of water on 100 sq. ft. in early spring.

**2nd application:** Foliar feed in spring after leaf formation with 2-3 oz. 4-3-3 and/or 1-2 oz. 0-0-8 in 1 gal. of water (use 4-3-3 only if leaves are light green to yellow and vines lack vigor).

**3rd application:** Foliar feed with 1-2 oz. 0-0-8 in 1 gal. of water in monthly intervals up to harvest. Till into soil with organic matter or legume cover crop.

**4th application:** Repeat 1st application in fall after harvest. Till into soil with organic matter or legume cover crop.

**New Planting:** Use same rates given under 1st application. Pour some of the fertilizer solution into the bottom of the planting hole.

## Fruit Trees

### Apple and Pear:

**1st application:** Foliar feed in spring after leaf formation with 2-3 oz. 4-3-3 in 1 gal. of water.

**2nd application:** Foliar feed during fruit set with 1-2 oz. 4-3-3 in 1 gal. of water.

**3rd application:** Foliar feed during fruit fill with 1-2 oz. 0-0-8 in 1 gal. of water. Add additional 1-2 oz. of Liquid Lime where bitter pit is problematic.

**4th application:** Broadcast 2-3 oz. 4-3-3 in 1 gal. of water on 100 sq. ft. in fall harvest or in early spring. Till into soil with organic matter or cover crop.

**New Planting:** Use same rates given under 4th application. Pour some of the fertilizer solution into the bottom of the planting hole.

### Cherry and Peach:

**1st application:** Broadcast 2-3 oz. 4-3-3 and 1-2 oz. 0-0-8 in 1 gal. of water on 100 sq. ft. in fall after harvest or in early spring. Till into soil with organic matter or cover crop.

**2nd application:** Foliar feed during fruit set with 2-3 oz. 4-3-3 in 1 gal. of water.

**New Planting:** Use same rates given under 1st application. Add an additional 2-3 oz. 0-12-0 to fertilizer solution. Pour some of the fertilizer solution into the bottom of the planting hole.

### Citrus:

**1st application:** Broadcast 3-4 oz. 4-3-3 in 1 gal. of water on 100 sq. ft. in spring.

**2nd application:** Foliar feed during pre-bloom period with 2-3 oz. 4-3-3 in 1 gal. of water.

**3rd application:** Repeat 2nd application after petals fall.

**4th application:** Repeat 2nd application during fruit formation.

**5th application:** Foliar feed during fruit fill 1-2 oz. 0-0-8 in 1 gal. of water.

**6th application:** Repeat 1st application in fall after harvest.

**New Planting:** Use same rates given under 1st application. Pour some of the fertilizer solution in to the bottom of the planting hole.

## Houseplants

**Summer:** Saturate soil with 2-3 oz. 4-3-3 in 1 gal. of water every 2-4 weeks. (fertilize less often on slow growing plants such as succulents and cacti).

**Winter:** Use same rates but fertilize every 4 to 8 weeks.

**Spring and Fall:** Flush pots with plenty of fresh water and fertilize with 2-3 oz. 4-3-3 and 2-3 oz. 0-12-0 in 1 gal. of water 2-3 days after flushing pots.

**Flowering Plants:** Add 2-3 oz. 0-12-0 to the fertilizer tea at first sign of bloom or at the beginning of bloom season if known.

# AGGRAND®

## Products are Your Complete Natural Lawn and Garden Care System

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### AGGRAND Natural Fertilizer 4-3-3

The leading liquid fertilizer on the market. Because of its fish/kelp base, it can be used in foliar or soil applications. Fish contains the plant nutrients nitrogen, phosphorus and potassium. Kelp is known to contain micronutrients and growth hormones, which contribute to good plant health.

### AGGRAND Natural Liquid Bonemeal 0-12-0

The perfect high-phosphorus fertilizer. Like the other AGGRAND products, it's effective and easy to use. Forget the dusty mess of dry bonemeal products and use this convenient, effective product.



### AGGRAND Natural Liquid Lime

A readily available source of calcium. Its calcitic lime is in very fine form—promoting faster soil reaction and increased penetration to the root zone where it's needed most. In addition, calcium has been shown to raise soil pH.



### AGGRAND Natural Kelp and Sulfate of Potash 0-0-8

AGGRAND Natural Kelp and Sulfate of Potash enhances plant productivity by providing potassium, sulfur, hormones and amino acids.



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AMSOIL products and Dealership information are available from your local AGGRAND/AMSOIL Dealer.

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