

- c. 1 lb. Ammo-phos (mono-ammonium phosphate) = 2 1/2 lb. Superphosphate + 1/2 lb. Ammonium Sulfate
- d. 1 lb Ammo-phos (mixture of mono- and di-ammonium phosphate) = 1lb Superphosphate + 5/6 lb Ammonium Sulfate

2. **For Potted Plants** – Recommendations on the basis of 100 sq ft can be converted to potted plant applications by dissolving the recommended amount in 25 gallons of water and applying as watering.

3. **New Potting, Bench Soils Before Planting** – Mix thoroughly 1 1/2 lbs of 5-10-5 or 5-10-10 or 1 1/4 lbs of 10-10-10 per 100 sq ft of bench area, or 2 oz of 10-10-10 to 4 bushels of potting soil.

4. **When a Proportioner is Used For Fertilizing** It is recommended that watering be done at the rate of 1 gallon per 2 sq ft of bench area to ensure some leaching at each watering to avoid salt toxicity.

USEFUL CONVERSION FACTORS

- 1 bushel = 1 1/4 cubic feet
 1 cubic yard = about 22 bushels (exactly 21.6 bushels) or 27 cubic feet
 100 square feet of bench area (6 inch depth of soil) contains 50 cubic feet or 40 bushels or 1.85 cubic yards
 1 pound per 100 square feet of soil (6 inches deep) = 1 ounce per 2 1/2 bushels
 1 acre = 43,560 square feet
 Pounds per 100 square feet x 436 = pounds per acre
 Pounds per 1000 square feet x 43.6 = pounds per acre
 1 gallon of concentrated liquid fertilizer weighs about 11 pounds
 1 pint of dry fertilizer weighs about 1 pound

- 1 pint = 2 cups or 32 tablespoons
 1 tablespoon = 3 teaspoons
 1 ppm means 1 part per million
 pp2m means parts per 2 million
 An acre of mineral soil turned to a depth of 6-2/3 inches weighs about 2 million pounds
 1 bushel = 134 3-inch standard pots of loose, unpacked soil mix
 1 bushel = 58 4-inch standard pots of loose, unpacked soil mix
 1 3-inch standard pot holds about 13 ounces of dolomitic limestone
 1 4-inch standard pot holds about 2 lbs. 4 oz. of dolomitic limestone
 Pounds per acre divided by 2 = parts per million (Soil Test conversion factor)

ADDITIONAL INFORMATION

For more information, contact your local Virginia Cooperative Extension (VCE) office or access the Internet and connect to VCE's web site at <http://www.ext.vt.edu>.

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SOIL TEST NOTE 13: Commercial Greenhouse and Nursery Production

SOLUBLE SALTS

While soluble salts pose few problems for field soils, the confined soil systems and intensive fertilizer programs in container and bench crops create conditions where excessive salts may build up and cause poor growth. Your Soil Test Report will indicate whether Leaching or Partial leaching is needed. The following are guidelines for leaching:

Complete Leaching - Apply 1-2 gallons of water per square foot of area or 1 quart per pot. After 30 to 90 minutes, repeat the application. Applying the water twice is important. The first watering dissolves the salts; the second carries the salts away. Where salts are excessively high, a third watering may be necessary.

MISCELLANEOUS FERTILIZER INFORMATION FOR GREENHOUSE PRODUCTION

Fertilizer Mixtures

- a. 1/2 lb. Potassium Nitrate plus 1/2 lb. Ammonium Nitrate = 1 lb. 23-0-23.
- b. 1 lb. Potassium Nitrate = 1 lb. Potassium Chloride + 3/4 lb. Ammonium Sulfate

STANDARD FERTILIZER APPLICATION RATES FOR GREENHOUSE CROPS

Material	Nutrient Analysis			Standard Rates			Relative Availability
	Nitrogen (N)	Phosphate (P ₂ O ₅)	Potash (K ₂ O)	Bench Crops	Potted Pl.	Potting Soil	
				Pounds per 100 sq ft	Pounds Per 25 Gallons of Water	Ounces Per 2 1/2 Bushels of Soil†	
NITROGEN (ACID REACTION)							
Ammonium Sulphate	20	0	0	1 ‡	1/2	--	Rapid
Ammonium Nitrate	33.5	0	0	2/3 ‡	1/4	--	Rapid
Urea	42-46	0	0	1/2 ‡	1/4	--	Rapid
NITROGEN (BASIC REACTION)							
Sodium Nitrate	16	0	0	1 ‡	1/2	--	Rapid
Calcium Nitrate	17	0	0	1 ‡	1/2	--	Rapid
Potassium Nitrate	12	0	44-46	1/2 ‡	1/4	--	Rapid
PHOSPHORUS							
Triple Superphosphate	0	45	0	1 1/3-2 1/2	--	--	Slow
Monoammonium Phosphate	11	48	0	1 1/3 ‡	--	--	Rapid
Diammonium Phosphate	21	54	0	1 ‡	--	--	Rapid
POTASSIUM							
Potassium Chloride (Muriate of Potash)	0	0	50-60	1/2 ‡	1/4	--	Rapid
Potassium Nitrate	14	0	44-46	1/2 ‡	1/4	--	Rapid
COMPLETE FERTILIZERS							
A. For dry application							
5-10-5 (or 5-10-10)	5	10	5	2 1/2	--	2 1/2	Rapid
10-10-10	10	10	10	1 1/4	--	1 3/4	Rapid
B. For liquid application							
20-20-20	20	20	20	1/2-3/4‡	1/2-3/4	--	Rapid
20-5-30	20	5	30	1/2-3/4‡	1/2-3/4	--	Rapid
CONTROLLED-RELEASE							
MagAmp	7	40	6	10-15	--	9-18	Controlled
Osmocote	14	14	14	10	--	9	Controlled
Peters	14	7	7	10	--	9	Controlled

† One bushel equals 1 1/4 cubic feet.

‡ Satisfactory for liquid fertilizer or organic fertilizer.