

# Mycorrhizae: Important Partners In Plant Nutrition

NORCROSS, Ga.—Most crops are mycorrhizal. The normal plant root is colonized by beneficial mycorrhizal fungi. Hyphae or filaments of these fungi can be 100 times longer than the entire plant root system.

The symbiotic association between plant and mycorrhizae consists of an exchange of energy for nutrients. The plant trades energy in the form of carbon compounds for mycorrhizal assistance in the uptake of nutrients including nitrogen, phosphorus, potassium, sulfur, magnesium, manganese, copper, zinc, calcium and iron. The positive effects of mycorrhizae on water uptake can reduce crop moisture stress.

Mycorrhizae enhance plant phosphorus nutrition. These fungi extend the volume of soil surrounding each plant root where nutrients are absorbed. The fungi also produce enzymes that help convert organic phosphate compounds to plant-usable forms, produce organic acids that mineralize phosphorus and interact with bacteria to solubilize phosphorus from soil minerals. They are involved in both the weathering of insoluble phosphorus and in the transport of phosphorus from the soil to the plant.

The role of mycorrhizae in enhancing phosphorus availability differs substantially from that of bacteria (rhizobia) involved in biological nitrogen fixation. The host plant-mycorrhizal association is less specific than that of legumes and rhizobia. Crop plants are colonized by a wide range of

mycorrhizal species.

Mycorrhizal enhancement of phosphorus availability is not usually sufficient for the nutrition of the host plant in soils with low phosphorus levels. Phosphorus fertilizer may be more effective in supplying phosphorus to the plant than mycorrhizal infection, but the two sources also work together.

Mycorrhizal colonization potential can decline in soils. Fumigation, flooding, severe erosion or extended periods of bare fallow may reduce the soil's potential for carrying mycorrhizae of benefit to the crop. In Australia, wheat phosphorus and zinc deficiencies after long fallow were attributed to the loss of mycorrhizal colonization because of the absence of host plants during the fallow period. A similar "fallow syndrome" has frequently been noted in corn following fallow in the western Corn Belt and Great Plains. In Nebraska, corn grown in a fumigated soil showed phosphorus deficiency symptoms that were alleviated by reintroducing mycorrhizae into the soil at the time of planting. In Iowa and Missouri fields where crops were killed by flooding in 1993, mycorrhizal colonization potential was reduced and starter fertilizer was needed to avoid phosphorus deficiency symptoms in corn even when phosphorus soil tests were high.

Mycorrhizal species of greatest importance to agricultural crops cannot be propagated in the absence of growing plant roots. Although inoculum of nitrogen-

fixing bacteria can be economically mass-produced and applied to seeds of legume crops, the mycorrhizal fungi important to field crop species cannot. Fortunately, most soils have a ready supply of these fungi, and there is a premium for

using farming practices that favor the maintenance of mycorrhizal populations. Mycorrhizae have a wide range of crop hosts and, therefore, have great potential to affect crop population and

sustainability.

Don't forget your partners! But remember, lack of these partners may require starter fertilizer phosphorus, even when soil phosphorus tests are high.

## Consignment Auction

DAUPHIN (Dauphin Co.)—On April 15, beginning at 9 a.m., the Dauphin County Conservation District will sponsor its Eleventh Annual Consignment Auction at the Gratz Fairgrounds in northern Dauphin County located north of Gratz Borough on Route 25.

The proceeds of the auction benefit the Dauphin County Agriculture and Natural Resources center and special conservation district projects such as scholarships and the public speaking contest.

The district invites businesses, dealers, organizations or any individual to consign or donate good, quality items for the April event. Items may be refused if they are not of good quality or in working order. Please note that no household goods will be accepted this year (only selected antiques and collectibles will be considered for sale).

As with past sales, this year's items may include recreational vehicles and automobiles, farming and industrial equipment, hand and power tools, building mater-

ials, lawn care equipment, nursery stock, and much more.

Consignment items for sale will be accepted from 9 a.m. to 4 p.m. April 10-14.

Consignors please note that on-the-road vehicles including trailers must have titles with them when they are consigned.

For more information, contact Mervin Adams at (717) 692-3076 or call Mike Hubler (Dauphin Co. Conservation District) at (717) 921-8100 or Russel Cassel at (717) 566-3284.

BUY, SELL, TRADE OR RENT THROUGH THE

# CLASSIFIED ADS

PHONE: 717-626-1164 or 717-394-3047  
FAX 717-733-6058  
Mon., Tues., Wed., Fri. 8 AM to 5 PM; Thurs. 7 AM to 5 PM

**1a CONSTRUCTION EQUIPMENT**

JD 440 Crawler Loader, Gas, Mechanically Excellent, Undercarriage 50%, \$2,350. (609)628-3193.

**DISMANTLING FOR PARTS:** Just arrived for parts. IHC 500E loader w/4in1 bucket, OROPS, winch, fair U/C, good motor. All parts available. **BALANDA EQUIPMENT** P.O. Box 407 RT 29 Palm, PA 18070. 1-800-322-8030

Ingersoll Air Compressor, 40hp w/motor, \$3500. 717/354-3105.

JD 450G dozer, 6-way blade, ROPS, 610 actual hrs., same as new, delivery avail. \$47,500.; Days 3 0 4 - 7 7 2 - 3 7 4 1 304-772-5578 Eves.

**DISMANTLING FOR PARTS:** Just arrived for parts. JD 855 w/EROPS, excellent tracks, very good engine, and many other parts available. **BALANDA EQUIPMENT** P.O. Box 407 RT 29 Palm, PA 18070. 1-800-322-8030

We Now Accept Visa  & Master Card 

(Word Ads Only)

## CLASSIFIED AD ORDER BLANK

PLEASE WRITE CLEARLY

MAIL TO:  
LANCASTER FARMING  
P.O. Box 609, Ephrata, PA 17522

PLEASE CALL OUR CLASSIFIED AD DEPT. IF YOU WANT TO ADVERTISE A DISPLAY BOX IN OUR PAPER

NOTE: Please do not use this form for Mail Box Market Ads, see instructions with Mailbox Markets.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_  
Zip \_\_\_\_\_ Phone( ) \_\_\_\_\_  
Please publish my \_\_\_\_\_ word ad \_\_\_\_\_ times  
starting with the \_\_\_\_\_ issue. Classify under  
# \_\_\_\_\_ . I enclose \_\_\_\_\_.

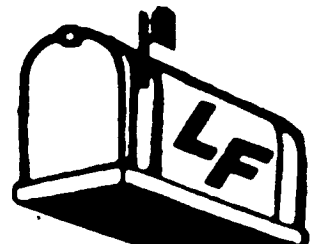
Check Enclosed  
 Visa (13 or 16 numbers)  
 Mastercard (16 numbers) (Be sure to include all numbers)  
Card # \_\_\_\_\_  
Exp. Date: \_\_\_\_\_ Signature \_\_\_\_\_

Box Replies: Ads with answers coming to a box number, c/o Lancaster Farming: \$1.50 per ad per week additional.

This newspaper will not be responsible for more than one incorrect insertion of any advertisement.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40

(PHONE NUMBERS COUNT AS ONE WORD)



### CLASSIFIED ADVERTISING RATES

40¢ per word per week - 1 or 2 times  
35¢ per word per week - 3 or more times  
11 word minimum

Words up to 11	1 Time	2 Times	3 Times
12	4.40	8.80	11.55
13	4.80	9.60	12.60
14	5.20	10.40	13.65
15	5.60	11.20	14.70
16	6.00	12.00	15.75
17	6.40	12.80	16.80
18	6.80	13.60	17.85
19	7.20	14.40	18.90
20	7.60	15.20	19.95
21	8.00	16.00	21.00

### DEADLINES:

SECTION C - WEDNESDAY AT 5:00 P.M.  
SECTION D - THURSDAY AT 9:00 A.M.  
OF EACH WEEK'S PUBLICATION

Lancaster Farming  
1 E. Main St.  
Ephrata, Pa 17522  
717-394-3047  
or Lititz  
717-626-1164  
FAX 717-733-6058  
PHONE HOURS:  
Mon., Tues.,  
Wed. & Fri.  
8 a.m. to 5 p.m.  
Thurs.  
7 a.m. to 5 p.m.  
OFFICE HOURS:  
Mon. thru Fri.  
8 a.m. to 5 p.m.  
The following categories are available for your classified advertising in Section D Deadline Thursday morning at 9 of each week's publication

- 1-Farm Equipment
- 2-Farm Eq. Wanted

The following categories are available for your classified advertising in Section C Deadline Wednesday afternoon at 5 of each week's publication

- 1a-Construction Equipment
- 3-Silos and Unloaders
- 4-Building and Supplies
- 5-Grain Equipment
- 6-Dairy Equipment
- 7-Livestock Equipment
- 8-Cattle
- 8a-Exotic Animals
- 9-Horses & Mules
- 10-Sheep & Goats
- 11-Swine
- 12-Artificial Breeding
- 13-Hog Eq. & Supplies
- 14-Poultry & Supplies
- 14a-Rattles
- 15-Feed & Seed
- 16-Fertilizer
- 17-Plants
- 18-Fruits & Vegetables
- 19-Nursery
- 20-Lawn & Garden
- 21-Services Offered
- 22-Custom Work
- 23-Help Wanted
- 24-Situations Wanted
- 25-Business Opportunities
- 26-Household
- 27-Pets
- 28-Lost
- 29-Found
- 30-Computers
- 31-Miscellaneous
- 32-Antiques
- 33-Recreational Vehicles
- 34-Autos
- 35-Trucks & Trailers
- 36-Real Estate