THE USE OF PEANUT HULLS IN POT MUM CULTURE

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The idea of using peanut hulls in pot plant culture is not new. Several research workers have experimented with peanut hulls in the potting mix, and some commercial flower growers have been routinely using peanut hulls. Very little information is available, however, on a comparison of plants grown in a medium containing peanut hulls, versus a medium without hulls.

A few growers have reported nutritional problems when pot plants were grown in a medium containing peanut hulls. Increased acidity (drop in pH) has been reported, when peanut hulls have been incorporated. Ammonia injury has been suspected in a few instances, and gypsum has been used to avoid this injury. Another item of concern to grower is a possible nematode problem when unsterilized hulls are used.

Studies were conducted at N. C. State University at Raleigh to:

1. evaluate peanut hulls in the potting medium for pot mums.
2. compare sterilized versus unsterilized hulls.
3. compare rates of dolomitic limestone, in mixtures with and without peanut hulls.

Cuttings of the varieties 'Yellow Delaware' and 'Commander' were used in the first study, and only 'Yellow Delaware' was included in the second study. The cuttings were donated by Yoder Brothers, Inc., Barberton, Ohio.

The first study was conducted from January 14 to April 5, 1965, and the second study was conducted from April 15 to July 9.

The peanut hulls used in this investigation were mill-run grade, obtained from a seed processing plant in Tarboro, N. C. The hulls which were steam-sterilized were subjected to a temperature of 180°F for 30 minutes.

The potting media were, by volume:

1. 40% sandy loam soil, 40% acid peat moss, 20% mill-run grade peanut hulls.
2. 33% sandy loam soil, 67% acid peat moss.

Dolomitic limestone was incorporated in the potting media at rates of 7, 14 and 21 ounces per 2 cubic feet. Gypsum was incorporated in one treatment, at 14 ounces per 2 cubic feet. Superphosphate was incorporated in the soil in the first study at 7 ounces per 2 cubic feet, but was not included in the second study. The plants in the first study were fertilized every 10 days with 20-20-20, alternated with KNO_3, at 2 1/2 pounds per 100 gallons water. The same fertilizers and rates were applied every 7 days in the second study.

Plants of the variety 'Commander' were given the "tall treatment" with regard to pinching and daylength control, while the 'Yellow Delaware' plants were given the "medium treatment".

There were 6 pots (5 cuttings/6-inch clay pot) in each treatment.

Table 1. Influence of potting media and dolomitic limestone on 'Commander' and 'Yellow Delaware' pot mums. Study conducted from January 14 to April 5, 1965.

Treatment	'Commander'		'Yellow Delaware'	
	Plant height in inches[z]	Number of flowers	Plant height in inches	Number of flowers
A. Sterilized peanut hulls				
1. 7 oz. dolomitic limestone	11.0"	25.8	10.2"	19.2
2. 14 oz. " "	10.9	27.0	10.2	17.5
3. 21 oz. " "	11.2	27.3	9.8	19.7
B. Unsterilized peanut hulls				
1. 7 oz. dolomitic limestone	10.6"	24.5	8.7"	19.5
2. 14 oz. " "	10.4	23.5	8.4	20.5
3. 21 oz. " "	10.4	24.5	8.9	20.2
C. No peanut hulls				
1. 7 oz. dolomitic limestone	10.8"	27.0	10.6"	17.3
2.14 oz. " "	10.7	27.3	10.4	20.7
3.21 oz. " "	11.4	25.8	10.6	18.8
D. Sterilized peanut hulls				
1. 14 oz. Gypsum	10.4"	28.2	8.7"	18.2

[z] Plant height measured from pot rim to tallest flower in pot.

Second study: The results of the second study are shown in Table 2 and Fig. 1-4.

Table 2. Influence of potting media and dolomitic limestone on 'Yellow Delaware' pot mums. Study conducted from April 15 to July 9, 1965.

Treatment	'Yellow Delaware'	
	Plant height in inches	Number of flowers
A. Sterilized peanut hulls		
1. 7 oz. dolomitic limestone	13.8"	24.5
2. 14 oz. " "	15.8	29.0
3. 21 oz. " "	15.5	25.5
B. Unsterilized peanut hulls		
1. 7 oz. dolomitic limestone	14.2"	25.0
2. 14 oz. " "	14.2	24.5
3. 21 oz. " "	14.8	24.0
C. No peanut hulls		
1. 7 oz. dolomitic limestone	15.2"	23.5
2. 14 oz. " "	15.8	25.5
3. 21 oz. " "	14.6	25.5
D. Sterilized peanut hulls		
1. 14 oz. Gypsum	13.5"	24.0

Fig. 1. A, sterilized peanut hulls; B, unsterilized peanut hulls; C, no hulls. 7 oz. dolomitic limestone / 2 cu. ft.

Fig. 2. A, sterilized peanut hulls, B, unsterilized peanut hulls; C, no hulls. 14 oz. dolomitic limestone / 2 cu. ft.

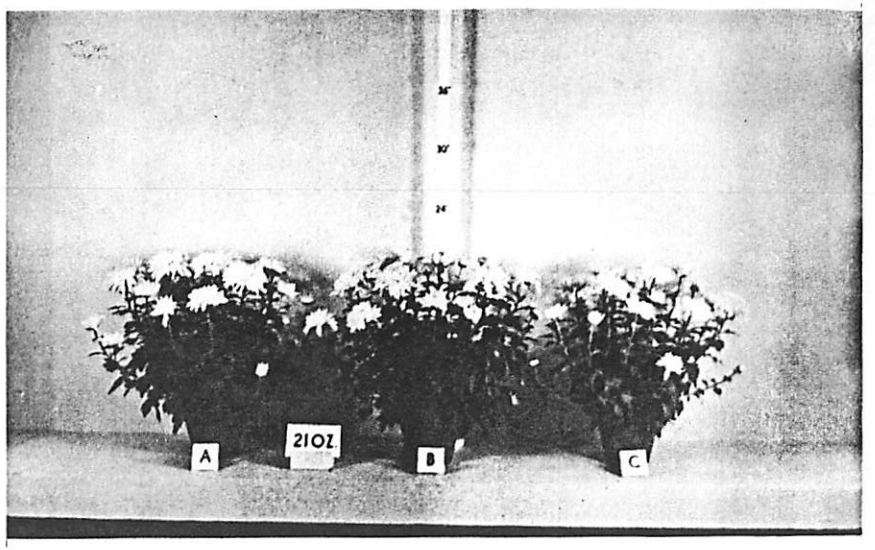

Fig. 3. A, sterilized peanut hulls; B, unsterilized peanut hulls; C, no hulls. 21 oz. dolomitic limestone / 2 cu. ft.

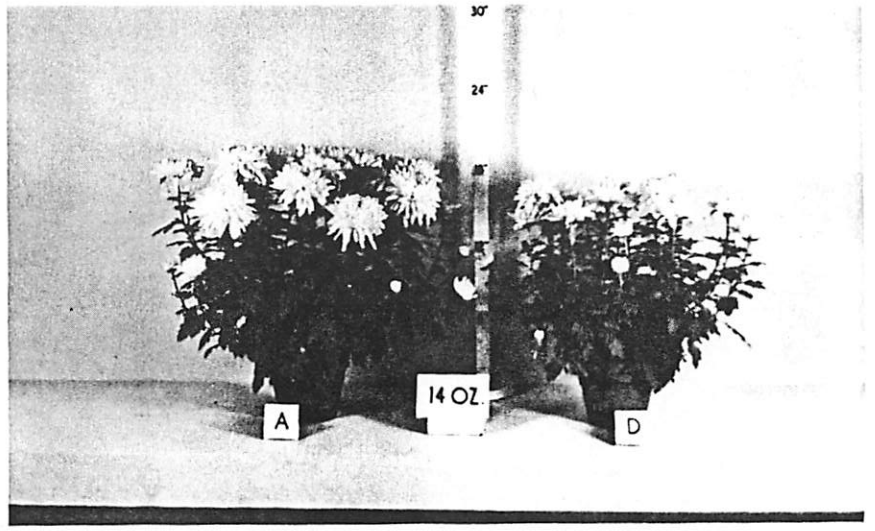

Fig. 4. A, sterilized peanut hulls, 14 oz. dolomitic limestone; D, sterilized peanut hulls, 14 oz. Gypsum.

Results

First study: The results of the first study are shown in Table 1.

Soil samples were analyzed at the conclusion of the study. The pH ranged from 6.1 to 6.8. The majority of the treatments had pH readings of 6.6 or 6.7.

The differences among treatments were generally small, with the exception of 'Yellow Delaware' plants in the unsterilized peanut hull treatment in the first study. These plants were shorter than plants in other treatments. Dolomitic limestone levels had little effect on plant height and floriferousness.

The 'Yellow Delaware' plants in the second study averaged approximately 5 flowers more per pot, and 5 inches more in height, than 'Yellow Delaware' plants in the first study. This is not surprising, as the first study was conducted from mid-January to early April, while the second study was conducted from mid-April to early July. (The plants in the first study were grown in a green house, in "full" sun, and at a 60°F night temperature. The plants in the second study were grown in a lightly-shaded greenhouse, equipped with a pad and fan cooling system).

The plants were watered with the Chapin watermatics system, and no difficulty was encountered in wetting the medium containing 20% peanut hulls.

No disease problems were noted in the unsterilized peanut hull treatment, nor on plants in any other treatment.

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Conclusions

Pot mums grown in a medium containing 20% mill-run grade peanut hulls were equal in quality to those grown in a soil-peat medium. There were no large differences among 3 rates of dolomitic limestone or 1 rate of gypsum.

No difficulties were experienced with the peanut hull treatments, and no unusual cultural adjustments were found to be necessary.