

Improving the Growth of Newly Planted Apple Trees

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The objective of this study was to compare the effects of pre-plant mono-ammonium phosphate (MAP), with or without broadcast apple pomace compost, on the early growth and fruiting on apple trees.

Macoun/B.9 apple trees were planted using a tractor-mounted tree planter on May 1, 1998 into plots which had received one of the following combinations of pre-plant treatments: 1) no compost plus urea; 2) no

compost plus MAP; 3) compost plus urea; and 4) compost plus MAP.

First-year Results

Compost application increased soil pH and cation exchange capacity (CEC) of the plots (Table 1). Soil P, K, Mg, and Ca also were increased in compost plots. Pre-plant MAP had no effect upon soil pH, CEC, P, K,

Table 1. Effect of apple compost on orchard soil properties, 1998.

Treatment	Soil pH	Cation exchange capacity	K (lb/A)	Mg (lb/A)	Ca (lb/A)
Control	6.4	6.9	279	296	2582
Compost	6.9	10.8	645	476	2701
Significance	**	***	***	**	***

Table 2. Effect of apple compost on leaf macro-nutrient concentrations, 1998.

Treatment	N (%)	P (%)	K (%)	Ca (%)	Mg (%)
Control	2.64	0.18	1.42	0.81	0.35
Compost	2.85	0.19	2.07	0.80	0.31
Significance	**	NS	***	NS	*

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Table 3. Effect of compost and MAP on new tree growth, 1998.

Treatment	Trunk cross-sectional area increase (cm ²)	Total shoot length (cm)
Urea only	1.0	106
MAP only	2.1	113
Compost + Urea	2.8	125
Compost + MAP	3.4	125
Significance:		
Compost	***	*
MAP	*	NS
Compost x MAP	NS	NS

Mg, or Ca (data not presented).

Apple compost increased N, K, and Mg in leaves (Table 2). Pre-plant MAP had no effect upon leaf mineral nutrient concentrations (data not presented).

Both compost and MAP increased trunk growth in 1998 (Table 3). Compost also increased the total shoot length per tree.

In summary, the addition of organic matter in the form of apple compost increased the growth of newly planted apple trees, by increasing nutrient holding

capacity and water holding capacity of the soil. The effects were small (i.e., 14% more shoot growth) in the first season, and it remains to be seen if growth of the trees in composted plots continue to be superior. Pre-plant incorporation of MAP also increased first-year tree growth, although not to the same extent as compost. The reason for this improved growth is not explained by the data. Leaf N and P concentrations were not affected by MAP, nor was soil pH.

