

## PEAT-LITE AND SOLUBLE SALTS

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Does the addition of soil to a peat-lite mix reduce the tolerance of plants to high salt levels? We don't know. It was suggested that we set up an experiment.

A peat-lite mix (Pro-Mix BX) was "fortified" by adding 1 1/2 lbs. potassium nitrate per cubic yard since the original soluble salt level was only 70 (mhos  $\times 10^{-5}$ , 1:2). To this, 0, 10, 20 or 40% composted soil was added. The control was 3:2:1 with Osmocote (14-14-14).

Chrysanthemum 'Bright Golden Ann' rooted cuttings were planted in these mixes in 4" square plastic pots in octuplicate. Half of these pots (4 replications) was watered in with 600 ppm N from 20-5-30 (2 1/2 lbs./100 gals.); the other half received only water.

None of the treatments exhibited acute soluble salt damage. We still don't know if adding soil to peat-lite decreases salt tolerance.

There are a few observations of interest. The 3:2:1 with Osmocote had a laboratory analysis showing soluble salts of 200. This was incorrect. An Osmocote pellet (or two) had not been removed and was squashed during extraction. This is a recurring problem with Osmocote analyses. At eleven days the salt reading was 50.

When a soil is marginally high in soluble salts (Table 1) and additional fertilizer is applied, root damage occurs. This was the case when 20-5-30 was applied to the 3:2:1 + O control. The roots were badly damaged at 11 days. A second plant, sacrificed at 20 days had rotted roots even though the tops appeared normal but small. At 32 days, some had started to grow. This is in contrast to the 3:2:1 + Osmocote without the additional 20-5-30 where the root growth was excellent, even better than in the peat-lite mixes.

In peat-lite, the root scores were just a bit better in pots where 20-5-30 had been added (no difference statistically) even though the potash levels exceeded 60. This indicates that, even with salt levels beginning at 100 and over, a peat-lite plus soil mixture may not be toxic to mums when additional fertilizer is applied. The buffering capacity of sphagnum peat and vermiculite is well known. It appears to be sufficient to cover up mistakes such as those that were made here on purpose.

Table 1. Soluble salt levels in ProMix BX containing an additional 1 1/2 lbs./cu. yd. potassium nitrate and watered in with 20-5-30 at 600 ppm N (2 1/2 lbs./100 gallons).

	<u>Days after planting mums</u>			
	<u>0*</u>	<u>11</u>	<u>20</u>	<u>32</u>
3:2:1 + Osmocote	200	135	65	50
ProMix BX	60**	45	65	--
ProMix BX + 10% soil	100	45	70	60
ProMix BX + 20% soil	130	50	50	25
ProMix BX + 40% soil	155	85	40	70

\*Before watering in with 20-5-30

\*\*Before addition of potassium nitrate

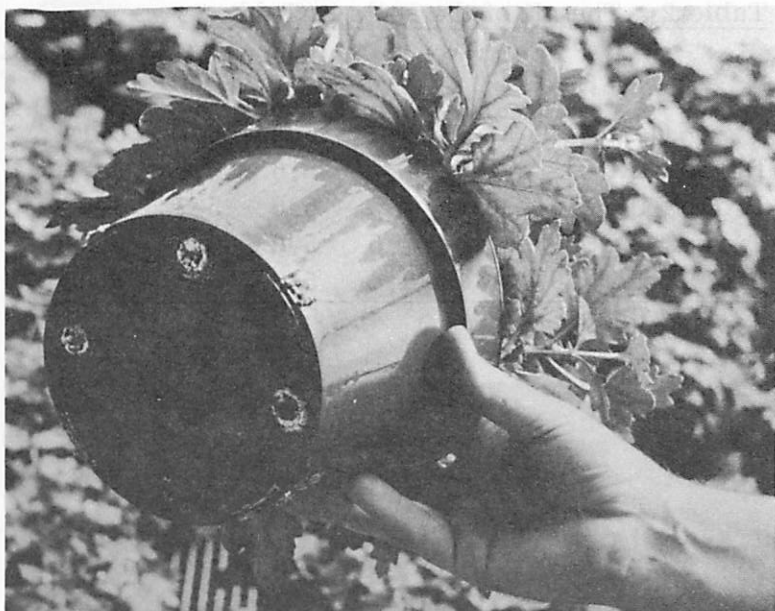


Figure 1. Salt crystals may form at the drainage holes where water evaporates, especially when soluble salts are excessive.

The pH of the media (Table 2) was higher than sometimes experienced with ProMix BX. The treatments without the 20-5-30 treatment averaged 0.3 pH units higher, reflecting the acidifying nature of this fertilizer. Remember that 20-20-20 is 3.9 times as acid as 20-5-30 and may cause even more depression of calcium and magnesium levels. In these tests, calcium averaged 55 ppm, 50 ppm when watered in with 20-5-30. Magnesium levels were 18.8 and 17.5 ppm respectively.

We didn't find out much about salt toxicities in peat-lite but thought you might be interested in the spin-offs.

Table 2. The pH of the soils in Table 1.

	Days after planting mums			
	0	11	20	32
3:2:1 + Osmocote	5.3	5.5	6.2	6.1
ProMix BX	4.5	5.6	5.5	5.7
ProMix BX+10% soil	4.5	5.6	5.7	6.2
ProMix BX+20% soil	4.5	5.2	5.9	6.0
ProMix BX+40% soil	4.4	5.6	6.1	6.0



Figure 2. Excessive soluble salts may cause chlorosis and browning of foliage.