FERTILIZERS THAT CAN BE USED IN SOLUTION WITH WATER TO FEED ORCHIDS

Developed by Douglas Harris, Houston Orchid Society member - copyright © December 2002

			Available nitrogen in chemical		
Name of fertilizer chemical compound	**Chemical formula**	**Molecular weight**	**Total N available**	**Ammonical nitrogen**	**Nitrate nitrogen**
Ammonium nitrate	NH_4NO_3	**80.052**	**35.00%**	**17.50%**	**17.50%**
Ammonium sulphate	$(NH_4)_2SO_4$	**132.144**	**21.20%**	**21.20%**	**0%**
Calcium nitrate	$Ca(NO_3)_2$	**164.100**	**17.07%**	**0%**	**17.07%**
Di-ammonium phosphate	$(NH_4)_2HPO_4$	**132.062**	**21.22%**	**21.22%**	**0%**
Di-potassium phosphate	K_2HPO_4	**174.178**	**0%**	**0%**	**0%**
Magnesium ammonium phosphate	$Mg(NH_4)PO_4$	**137.322**	**10.20%**	**10.20%**	**0%**
Magnesium sulphate	$MgSO_4$	**120.370**	**0%**	**0%**	**0%**
Mono-ammonium phosphate	$(NH_4)H_2PO_4$	**115.028**	**12.18%**	**12.18%**	**0%**
Mono-potassium phosphate	KH_2PO_4	**136.086**	**0%**	**0%**	**0%**
Phosphoric acid (liquid)	H_3PO_4	**97.994**	**0%**	**0%**	**0%**
Potassium chloride	KCl	**74.550**	**0%**	**0%**	**0%**
Potassium nitrate	KNO_3	**101.110**	**13.86%**	**0%**	**13.86%**
Potassium sulphate	K_2SO_4	**174.260**	**0%**	**0%**	**0%**
Urea (see note below)	$CO(NH_2)_2$	**60.062**	**46.65%**	**0%**	**0%**

Note on nitrate N (NO_3) - This is preferred nitrogen for non-soil media - the so called "instant" N.
Note on ammonium nitrogen (NH_4) - Limit range of NH4 between 10% to 20% of total available nitrogen. Conversion of (NH_4) to nitrate N can also require days to a week.
Note on urea nitrogen - Limit usage to soil media because of lengthy bacterial breakdown period required. Period can be several weeks.

	Actual percentage by weight available of these elements			
Name of fertilizer chemical compound	**% P**	**% K**	**% Mg**	**% S**
Ammonium nitrate	**0%**	**0%**	**0%**	**0%**
Ammonium sulphate	**0%**	**0%**	**0%**	**24.26%**
Calcium nitrate	**0%**	**0%**	**0%**	**0%**
Di-ammonium phosphate	**23.45%**	**0%**	**0%**	**0%**
Di-potassium phosphate	**17.78%**	**44.90%**	**0%**	**0%**
Magnesium ammonium phosphate	**22.55%**	**0%**	**17.70%**	**0%**
Magnesium sulphate	**0%**	**0%**	**20.20%**	**26.63%**
Mono-ammonium phosphate	**26.92%**	**0%**	**0%**	**0%**
Mono-potassium phosphate	**22.76%**	**28.73%**	**0%**	**0%**
Phosphoric acid (liquid)	**31.60%**	**0%**	**0%**	**0%**
Potassium chloride	**0%**	**52.45%**	**0%**	**0%**
Potassium nitrate	**0%**	**38.67%**	**0%**	**0%**
Potassium sulphate	**0%**	**44.88%**	**0%**	**18.40%**