SOMETHING ABOUT FERTILIZERS

Synthetic Ammonium Sulphate. In 1923 synthetic ammonium sulphate from the German nitrogen fixation plants came into the world market in large quantities. It is now manufactured in limited qunatities in many other countries. Ammonium sulphate is not, as might be supposed, manufactured to any great extent by treating ammonia with sulphuric acid, although this can be done. The method of manufacture followed is known as the gypsum process.

By this method ammonia water is conducted into a tank containing pulverized gypsum suspended in water. At the same time carbon dioxide is bubbled through the mixture under 5 atmospheres pressure. Ammonium carbonate is first formed, which in turn reacts with the calcium sulphate to form ammonium sulphate. The ammonium sulphate remains in solution and is recovered by evaporation after the resultant calcium carbonate has been filtered off.

Synthetic ammonium sulphate that is manufactured in the United States is sold under the trade name Arcadian. Arcadian ammonium sulphate differs from the ordinary commercial grade ammonium sulphate in that it has been neutralized, dried, and screened to remove lumps.

Commercial ammonium sulphate varies in color from white through a yellow to a gray salt. Occasionally various tints of brown, blue, yellow or gray may be present. These tints are due to impurities such as ferric ferrocyanide and arsenious sulphate or to traces of tar or its derivatives.

When ammonium sulphate is added to a fertilizer mixture containing superphosphate, and the mixture is allowed to stand for a time, the mixture is likely to become hard due to a chemical reaction that may take place between the ammonium sulphate and the monocalcium phosphate as follows:

$$CaH_4(PO_4)_2H_2O + (NH_4)_2SO_4 + H_2O = CaSO_4 \cdot 2H_2O + 2NH_4H_2PO_4$$

(to be continued)

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TABLE FOR CALIBRATING FERTILIZER OF LIME DISTRIBUTOR

Yardage to be Traveled by Distributing Machines of Various Hopper Widths to Discharge 200 Pounds material at Various Rates Per Acre.

Width of Hopper In Feet	Rates In Pounds Per Acre 100	200	300	400	500	600	700	800	900	1000
5	5808	2904	1936	1452	1162	968	830	726	645	580
6	4840	2420	1613	1210	968	807	691	605	537	484
7	4148	2074	1383	1037	830	778	593	518	461	415
8	3630	1815	1210	907	726	605	519	453	403	363
9	3226	1613	1075	807	645	537	461	404	358	323
10	2904	1452	968	726	580	484	415	363	322	290
11	2640	1320	880	660	528	440	377	330	293	264
12	2416	1208	805	604	484	403	345	302	268	242

INSTRUCTIONS

1. Put 200 pounds material in hopper.
2. Set distribution controls at estimated position for desired rate.
3. Select yardage under desired rate per acre.
4. Operate spreader for the designated distance at normal speed.
5. If 200 pounds is discharged before traveling entire distance, reduce the feeding rate.
6. If 200 pounds is not discharged in designated distance, increase the rate of feed.
7. Repeat operations until 200 pounds material is discharged in the designated distance for the desired rate per acre. Always start each trial with exactly 200 pounds material in the hopper.

EXAMPLE

Width of hopper	8 feet
Desired rate of application	600 pounds per acre
Amount of material in hopper	200 pounds
Distance to travel to discharge 600 pounds	1815 yards
Distance to travel to discharge 200 pounds	605 yards

The above method may be used for the whirlwind type spreader by using width of spread as width of hopper.