

Connecticut Agricultural Experiment Station.

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HOME-MIXED FERTILIZERS.

This Bulletin contains analyses of all the samples of Home-mixed Fertilizers which have been sent to the Station this year, with such facts as could be obtained regarding their cost, etc. The formulas by which the fertilizers were mixed are first given followed by the table of analyses and valuations with some explanations and further remarks regarding them.

2455. Mixture for General Use. Made by the late J. J. Webb, Hamden.

FORMULA.

834 pounds	Dissolved Bone Black, costing.....	\$10.43
666	" Tankage, "	9.32
208	" Sulphate of Ammonia, "	7.80
292	" Muriate of Potash, "	5.84
<u>2000</u>	" "	<u>\$33.39</u>
	Add freight to New Haven.....	1.60
	Total cost of raw material.....	<u>\$34.99</u>

Mr. Webb bought the above chemicals on guarantee, intending to have a mixture containing Nitrogen 4.75 per cent., Phosphoric Acid 8 per cent. and Potash 7.75 per cent. The analysis given further on will show how closely the calculation agreed with the actual composition.

The materials cost \$33.39 in New York or \$34.99 in New Haven.

2456. Mixture for Corn. Made by Dennis Fenn, Milford.

FORMULA.

700 pounds of Ground Bone,	costing.....	\$10.50
500 " " Tankage,	"	7.15
1000 " " Dissolved Bone Black,	"	13.00
300 " " Sulphate of Ammonia,	"	11.19
250 " " Muriate of Potash,	"	5.20
200 " " Double Sulphate of Potash and Magnesia,	"	3.06
<u>2950</u> " "		<u>\$50.10</u>

These materials cost \$50.10, or \$34.00 per ton delivered in Milford.

2457, Mixture No. 1 and 2458, Mixture No. 2. Made by C. T. Merwin & Son, Milford.

FORMULAS.

Mixture No. 1.			Mixture No. 2.		
Sulphate of Ammonia,	166 lbs., costing...	\$6.19	133 lbs., costing...		\$4.99
Tankage,	666 " "	9.52	530 " "		7.58
Bone,	--- " "	---	400 " "		6.02
Dissolved Bone Black,	834 " "	10.84	670 " "		8.71
Muriate of Potash,	334 " "	6.95	267 " "		5.55
	<u>2000</u> " "	<u>\$33.50</u>	<u>2000</u> " "		<u>\$32.85</u>

The cost covers freight to Milford.

2474. Mixture made by Edward Davis of Whitneyville.

FORMULA.

Home made Superphosphate.....	350 pounds
Fish Scrap.....	350 "
Sulphate of Ammonia.....	110 "
Muriate of Potash.....	150 "
	<u>960</u>

The Superphosphate was made by dissolving in oil of vitriol refuse bone char from a factory where bone was used for case-hardening. The cost of material is unknown.

2588. Mixture for General Use. Made by N. D. Platt, Milford.

FORMULA.

500	pounds Sulphate of Ammonia,	costing	.....	\$18.65
2000	" Tankage,	"	.....	28.60
500	" Bone,	"	.....	7.53
2000	" Dissolved Bone Black,	"	.....	26.00
500	" Muriate of Potash,	"	.....	10.40
270	" High grade Sulphate of Potash,	"	.....	8.26
<u>5770</u>	" Total	.....		<u>\$99.44</u>

Cost of materials delivered at Milford \$34.50 per ton.

2589. Mixture made by N. S. Platt, Cheshire.

FORMULA.

100	pounds Bone,	costing	.....	\$1.75
300	" Blood, Bone and Meat,	"	.....	5.25
800	" Dissolved Bone Black,	"	.....	10.40
300	" Double Sulphate of Potash and Magnesia,	"	.....	4.50
<u>1500</u>	" Total,	"	.....	<u>\$21.80</u>
	Cost of the materials in New Haven	.....		\$29.07 per ton.
	Add freight	.....		1.20
	Cost in Cheshire	.....		<u>\$30.27</u>

2591. Mixture made by R. M. Treat, Woodmont.

FORMULA.

900	pounds Tankage,	costing	.....	\$12.87
340	" Sulphate of Ammonia,	"	.....	12.68
200	" Ground Bone,	"	.....	3.01
2000	" Dissolved Bone Black,	"	.....	26.00
560	" Muriate of Potash,	"	.....	11.65
<u>4000</u>	"	"	.....	<u>\$66.21</u>

Cost of the materials delivered at Woodmont \$33.11 per ton.

2592. Mixture for Corn. Made by Geo. F. Platt, Milford.

FORMULA.

450	pounds Tankage,	costing	.....	\$6.44
450	" Ground Bone,	"	.....	6.77
232	" Sulphate of Ammonia,	"	.....	8.65
384	" Dissolved Bone Black,	"	.....	4.99
305	" Muriate of Potash,	"	.....	6.34
179	" High-grade Sulphate of Potash,	"	.....	5.48
<u>2000</u>	"	"	.....	<u>\$38.67</u>

The cost of these materials, delivered at Milford, was \$38.67 per ton.

2593. Mixture for Potatoes. Made by G. F. Platt, Milford.

FORMULA.

500 pounds Sulphate of Ammonia, costing	.....	\$18.65
2500 " Tankage,	"	35.75
2500 " Ground Bone,	"	37.63
2500 " Dissolved Bone Black,	"	32.50
750 " Muriate of Potash,	"	15.60
550 " Sulphate of Potash,	"	16.83
<u>9300</u> "	"	<u>\$156.96</u>

Cost of the materials delivered in Milford \$33.75 per ton.

2594. Mixture for Potatoes. Made by Dennis Fenn, Milford.

FORMULA.

200 lbs. Sulphate of Ammonia,	costing	....	\$7.46
500 " Tankage,	"	....	7.15
650 " Bone,	"	....	9.78
1000 " Dissolved Bone Black,	"	....	13.00
250 " Muriate of Potash,	"	....	5.20
800 " Double Sulphate of Potash and Magnesia,	"	....	12.24
<u>3400</u>			<u>\$54.83</u>

Cost of materials delivered in Milford, \$32.26 per ton.

The raw materials used for these mixtures were for the most part purchased from L. Sanderson, of New Haven and C. Meyer, Jr., of Maspeth, L. I., and were sampled by station agents and analyzed early in the season. Knowing their composition and the quantity of each which was used, the composition of the mixtures can be calculated, assuming that all weights were correctly taken, that the materials had not lost or gained moisture and that both mixing and sampling had been thorough. These calculated analyses are given in the table to compare with the actual composition of the mixtures. The agreement is quite satisfactory, with the single exception of No. 2589.

The mechanical condition of these mixtures is excellent and their chemical composition corresponds with that of the ready mixed "special fertilizers" and ammoniated superphosphates of the highest grade.

HOME-MADE FERTILIZERS. ANALYSES AND VALUATIONS.

Station No.	Name.	Nitrogen.				Phosphoric Acid.				Potash.		Chlorine.	Valuation per ton.	Cost of Chemicals (mixed).	
		As Ammonia.	Organic.	Found.	Calculated.	Soluble.	Reverted.	Insoluble.	Total.	Found.	Calculated.				
2455	Estate J. J. Webb, Mixture.....	2.50	2.44	4.94	4.97	5.73	2.38	.69	8.80	8.69	7.89	7.56	.....	39.02	34.99
2456	Dennis Fenn, Corn Mixture.....	2.11	1.86	3.97	4.28	4.46	5.56	2.46	12.48	12.22	6.54	6.76	4.61	38.06	34.00
2457	C. T. Merwin & Son, Mixture No. 1.....	1.96	2.52	4.48	4.50	6.14	2.02	.64	8.80	8.70	9.35	8.60	.....	38.68	33.50
2458	" " No. 2.....	1.60	2.91	4.51	4.24	6.20	3.94	1.62	11.76	11.51	6.61	6.90	.....	39.89	32.85
2474	Edward Davis, Mixture.....	2.89	1.61	4.50	.....	3.43	2.15	2.28	7.86	.....	8.98	.....	7.74	34.80	.....
2588	N. D. Platt, Mixture.....	2.04	2.65	4.69	5.00	4.44	4.03	1.07	9.54	9.30	8.05	7.00	4.80	39.35	34.50
2589	N.-S. Platt, Mixture.....	.....	1.83	1.83	.95	9.70	3.62	1.28	14.60	14.92	3.15	5.56	.17	32.38	30.27
2591	R. M. Treat, Mixture.....	1.95	1.95	3.90	3.80	7.48	3.10	.83	11.41	11.20	7.62	7.30	.....	38.80	33.11
2592	George F. Platt, Corn Mixture.....	2.65	2.34	4.99	5.02	2.70	4.95	1.54	9.19	9.29	14.07	12.56	7.40	47.48	38.67
2593	George F. Platt, Potato Mixture.....	1.22	2.73	3.95	4.24	3.42	6.68	2.37	12.47	11.83	7.41	7.27	4.03	39.20	33.75
2594	Dennis Fenn, Potato Mixture.....	1.26	1.74	3.00	3.09	4.05	4.69	1.56	10.30	10.27	9.98	9.93	3.66	36.38	32.26

It should be added that the costs are based on the regular cash ton prices of the trade. The actual cost in many, if not all, of these cases has been considerably reduced by special club rates which are given where a number of farmers give a cash order through an agent for a car lot or more.

The average cost of materials, for the fertilizers referred to in this Bulletin, has been \$33.79 per ton delivered at the purchaser's freight station. Two dollars will fully cover the cost of screening and mixing. [From a dollar to a dollar and a half is the estimate of those who have done the work.] *At the highest estimate*, therefore, the average cost of these home-mixed fertilizers has been \$35.79 per ton. The average valuation has been \$38.83 per ton. In no case has the valuation been less than the cost of the chemicals mixed. The valuation of ready-mixed fertilizers on the other hand is quite uniformly less than their cost.

The advantages claimed for home-mixing are :

1. Each ingredient can be separately examined by the purchaser and if necessary sent to the Experiment Station for analysis. The detection of inferior forms of nitrogen or phosphoric acid is much easier and more certain in a single article than in a mixture.
2. It is self-evident that an intelligent farmer by home-mixing is better able than any one else can be to adapt the composition of his fertilizers to the special requirements of his land as well as of his crop, and how greatly the soil-requirements vary in this State, even over a small area, is strikingly shown by the field experiments annually reported by our farmers through the Stations.
3. It is claimed that the same quantity and quality of plant food costs much less in home-mixtures than in ready-made mixtures because the cash purchaser of fertilizer chemicals deals directly with the importer or manufacturer, not with the middleman or retailer, and receives quotations without reference to the prices asked in his neighborhood by retailers of the same goods.

There is no longer any question as to the expediency of home-mixing in many cases. From such raw materials as are in our markets, without the aid of milling machinery, mixtures can be and *are* annually made on the farm which are uniform in quality, fine and dry and equal in all respects to the best ready-made fertilizers.

The economy of home-mixing depends, of course, on the prices which sellers of mixed goods are willing to take and on the cost of fertilizer-chemicals delivered as near the farm as mixed goods can be bought.

There is always a chance for the farmer who studies the market and the needs of his farm to save enough in the purchase of his fertilizers to make just the difference between profit and loss on a crop, and in farming, as in everything else where competition is close, profit usually comes from care in these small margins of expense. Perhaps home-mixtures are not indeed always and everywhere cheaper or more economical than commercial mixtures, but it will often happen that money can be saved by the timely purchase of raw materials and their mixture on the farm. Each individual farmer ought to be the best or only judge of the economy of home-mixing in his particular case, as well as of the "formulas" which are best adapted to his soil and crops.