

The tank contained 4.48 grains of zinc carbonate per gallon with a trace of iron and no lead. Water from the pipe gave 4.29 grains of zinc carbonate per gallon and a trace of iron.

It is evident then, when the dangerous nature of zinc as a poison is taken into consideration, that the use of zinc-coated vessels in connection with water or any food-liquid should be avoided.

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## SOME COTTON-SEED ANALYSES.

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The interest attaching to the variation in the percentage of fats yielded by different varieties of cotton-seed, has led to the analysis of several American and foreign seeds, with results as tabulated.

Table I. gives a food stuff analysis of the kernel, and table II. the value of the raw seed as to its ash, and possible yield of fats.

In all cases the fats were extracted with ether, the proteins calculated from the percentage of nitrogen, the fat-free residue was washed with NaHO and  $H_2SO_4$  to find the crude cellulose and the carbohydrates obtained by difference. The calculations are all made on the air-dried seed. Eight varieties in all were examined.

No. 1. Belongs to the botanical species *Gossypium hirsutum*; generally supposed to be a variety of the *Gossypium Barbadense*. It is called the "Duncan" cotton, comes from the eastern part of the State, was grown on sandy land with a yield of 400 pounds to the acre.

No. 2. Also *Gossypium hirsutum*, known as the "Heavy Boll Prolific," was grown on sandy loam in the central part of the State with a yield of 300 pounds to the acre.

No. 3. *Gossypium hirsutum*, known as "Sea Island" cotton grown for one year on clayey loam in the central part of the State with a fair yield.

No. 4. Is known as the "Hodge" cotton, was grown on sandy upland with a yield of between 300 and 400 pounds to the acre.

No. 5. Known as the "American Cotton Tree," is a variety not cultivated for commercial purposes but grows wild on marsh land in warm districts. The seed shows a noticeably high percentage of ash

and fats. The tree being fairly large probably concentrates a large amount of mineral matter in the seed for its use in germinating.

No. 6. *Gossypium Barbadense*, is an Egyptian cotton.

No. 7. Belonging to the same variety is from the West Indies ; and No. 8, is from the "Red Cotton" of Southern Russia. These last seeds were small, of a gray color and had a slightly musty odor, showing that they had probably undergone a slight change. This may account for the very low percentage of fats.

Experiments in selecting seed and cultivation with a view to increasing the yield of fats and the nutritive ratio would be interesting and valuable. As the use of a dominant ingredient, potash, in the fertilizer is found to increase the percentage of sugar in the beetroot, so the use of a special fertilizer on the cotton might be made to increase the value of seed as well as of the fibre. As soil and climate effect the quality and yield of the cotton, so is the seed influenced. The same variety consequently shows variations in different seasons and localities and even in the same field.

I. KERNEL.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.
Moisture @ 100° C.....	7.08	7.25	7.50	7.23	6.45	8.81	7.46	6.94
Ash.....	4.91	4.15	3.51	4.23	5.41	4.96	4.45	4.62
Fats.....	34.42	40.39	39.76	38.09	44.70	38.54	36.77	32.71
Crude Cellulose.....	4.70	3.43	4.24	4.21	4.06	4.33	5.12	5.00
Protein Nitro. Matter.....	30.25	27.94	23.44	27.68	21.62	27.25	28.81	35.18
Carbohydrates, N.-free Ex- tract.....	13.64	16.84	21.55	18.56	17.76	16.11	17.29	15.25
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Nitrogen.....	4.84	4.47	3.75	4.43	3.46	4.38	4.61	5.63
Equiv. to NH <sub>3</sub> .....	5.87	5.42	4.55	5.38	4.20	5.29	5.59	6.81
Nutritive Ratio.....	1:1.90	1:2.17	1:2.80	1:2.19	1:3.07	1:2.13	1:2.05	1:1.50
II. Whole seed—Kernel, Hull.								
Ash.....	4.26	3.46	3.26	3.40	4.27	3.62	3.47	4.12
Fats.....	19.71	20.19	19.88	19.04	22.35	19.27	18.38	16.35