

2. From the first of February to the middle of June there was a definite effect of the different summer cover crops plowed into the soil on the nitrate content of the soil. During this period the soil into which the planted leguminous summer cover crops had been turned showed a higher nitrate content than the soil in which "Florida pusley" had been incorporated. *Crotalaria striata* plowed into the soil gave the highest nitrate content in the soil for this period, both in 1927 and in 1928. The nitrates formed from the decomposition of velvet beans and cowpeas were about the same in 1927, but cowpeas gave a higher nitrate content in the soil in 1928 than did velvet beans. The decomposition of beggarweed gave rise to a lower nitrate content in the soil than did the other planted leguminous cover crops.

3. After the middle of June there was apparently no specific effect on the accumulation of nitrates in the surface soil attributable to the plowing under of the different summer cover crops. The early fall period of both years is marked by a low nitrate level in the soil.

Soil samples were collected from the 0-6 inch and the 6-12 inch depths of the different cover crop plots in 1926 and 1927. The samples were air-dried, screened through a 2 millimeter round-holed sieve, finely ground and analyzed for their content in organic matter, carbon and nitrogen. The results of these analyses are summarized as follows:

4. The different summer cover crops plowed into the soil had no specific effect on the content of well-decomposed organic matter, carbon and nitrogen in the soil.

5. The average C : N ratio of the soil was found to be 13.6 for the 0-6 inch depth and 14.1 for the 6-12 inch depth.