ANALYSIS OF *CROTALARIA JUNCEA* WITH SPECIAL REFERENCE TO ITS USE IN GREEN MANURING AND FIBRE PRODUCTION

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**GREEN** manuring and the cultivation for this purpose of quickly growing crops, chiefly of the leguminous order, has been a very ancient farm practice in most parts of the world associated with agriculture. Of the large number of crops used for this purpose, probably none answers the purpose better than *Crotalaria juncea*—a fairly rapid-growing plant, with a relatively short life cycle, capable of being raised without any special soil preparation. When ploughed down it requires a comparatively short time to decay, and besides acting as an important fertilizer it also yields fibre. The use of *crotalaria* as a green manuring and fibre crop has led the experimental agriculturists to advocate its cultivation in areas deficient in manurial constituents and in such other localities where other money crops may not be successfully grown for want of soil fertility. The scientific importance of this crop as a green manure in increasing soil fertility and its rôle in inducing physico-chemical changes in the soil which directly or indirectly bear upon plant growth have, however, been recognized only lately.

A critical survey of the literature indicates that the aspects along which work has been conducted during the last two decades centre round the determination of the best method of burying, the effect of addition of extra manure, and the influence of rainfall and water supply on the subsequent changes induced in the soil. Its utility in improving the physical configuration and the water-holding capacity of the soil, its usefulness as a reserve for the retention and circulation of plant food which would otherwise be washed away, as well as its rôle in acting as a substrate for the nitrogen-fixing bacteria are additional aspects along which useful work has been conducted. Little or no attention, however, has been given to the nature and the amount of materials formed at successive stages of growth of *crotalaria* and which constitute the substratum for all changes subsequent to the incorporation of the plant in the soil. Not infrequently the observed harmful after effects of green manuring are to be traced to the lack of this fundamental knowledge.

In order to determine, therefore, the period when the plant can yield the maximum amount of organic matter, contribute the most to the fertility of the soil in terms of nitrogen content, return to the soil the maximum amount of manurial nutrients, and provide the best quality of fibre, analyses of the plant as a whole and of its various parts were made at successive stages throughout the life cycle with reference to the more important inorganic and organic constituents. The data thus obtained are compared with parallel observations on

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