EFFECT OF IMMATURE ON THE CHARACTERS
OF COTTON FIBER, YARN, AND SEED


Lint and seed from cotton bolls that have opened prematurely often contribute substantially to the supplies of these products entering into commerce. The data presented in this paper were gathered for the purpose of extending the existing information on the characters of lint that are influenced by boll immaturity and the effects of immaturity on the constituents of cottonseed. The data were derived from seed cotton picked from living and dead plants in fields affected by phycomatotrichum root rot. Although it can not be assumed that the effects on lint and seed of premature boll opening resulting from root rot are identical with the effects of other causes of premature opening, some similarities are nevertheless to be expected.

Notable among the diseases responsible for premature boll opening are phycomatotrichum root rot caused by the fungus Phycomatotrichum omnivorum, cotton wilt caused by the fungus Fusarium vasinfectum, and verticillium wilt caused by the fungus Verticillium albo-astrum. These diseases have the effect in common of interrupting the movement of water into or through the plant, often with the result that the plant wilts or dies. Premature opening results also from agents that reduce the synthesis and movement of carbohydrates into the bolls. The leaf-destroying insects and diseases and the chemicals used for defoliation fall in this category. Among other causes of premature opening there are to be mentioned such factors as drought, frost, and boll insects. Boll insects often destroy only one or more locks, but thereby interrupt the development of the remaining locks. In all cases, if secondary thickening of the fiber walls has progressed far enough, the lint will fluff out of the separated carpels and be gathered with seed cotton from mature bolls.

Immaturity of fibers like immaturity of seed, in the sense immaturity is customarily used, may result from various causes in addition to arrested boll development. Thus the fibers of the chalazal cap are characteristically thin walled and contribute to the substantial percentages of "immature" fibers found in all samples of cotton. As regards spinning properties there is as yet no reason for differentiating between fibers with reduced numbers of daily depositions of cellulose and fibers with very thin daily depositions.

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