

Abstract

Field experiments at Narrabri in 1993, 1994 and 1995 have utilised overhead sprinklers and portable rain-out shelters. Results have indicated that microbial damage is initiated and develops when mature exposed lint is subject to wet weather in the field prior to harvest. Microbial deterioration of cotton fibre continued within the module when the module moisture was high. Techniques have been developed to apply anti-microbial substances to seed cotton prior to producing modules and to generate different moisture contents in "mini" modules for storage experiments.

Whilst a series of some twenty two textile dyes were evaluated at the University of New South Wales, no simple definitive staining test has been found for microbially damaged cotton. A combination of high pH, low reducing substances, and microscopic examination in sodium hydroxide appears to confirm the presence of microbial damage in cotton.

Based on the limited dyeing trials conducted in this project, the total colour difference between dyed lots does not exceed the total colour difference between the raw cotton lots. Hence the colour difference between dyed lots can be ascribed to the initial colour of the cotton. Bleaching should reduce this problem.

Microbial damage of seed cotton usually develops in the field when rain delays harvest and may continue within the module if the module moisture content is high. Treatment of cotton with acetic acid appears to reduce the microbial damage to the cotton. Other workers have found that acetic acid inhibits enzyme amylase in the genus *Aspergillus* and other studies utilising propionic acid have also resulted in a lessened efficiency of *A.flavus* to infect the cotton plant and reduced production of aflatoxins. This finding should be pursued in future work.