RFLP ANALYSIS OF PHOTOPERIODIC GENES IN COTTON

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Abstract

Cotton (*Gossypium hirsutum* L.) race lines offer a wide genetic diversity and desirable traits to cotton breeding programs. Many of the race lines are also photoperiodic, which must be overcome. Although the use of traditional genetics can remove the photoperiodism, it is a time-consuming process. This study uses both traditional genetics and molecular genetics in an attempt to find and identify molecular probes to recognize the photoperiodic gene or genes. Restriction fragment length polymorphism (RFLP) analyses were used to compare upland cotton and photoperiodic races of cotton, to determine if a marker for photoperiodism could be identified. We used six race lines, one commercial cultivar, and the bulked flowering and nonflowering F2's of a race line. A total of 468 different probes were used. RFLP analysis found 605 polymorphisms. Comparisons of the polymorphisms were made to link the polymorphisms to the photoperiodic flowering response and to evaluate the differences between the tested lines. Results show a wide range of differences between lines, but the probes showed only a few polymorphisms when applied across all photoperiodic and non-photoperiodic lines. These are candidates for association with photoperiodism genes.

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