

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

4,000

Open access books available

116,000

International authors and editors

120M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Genetic Mapping in Cotton

Adem Bardak, Khezir Hayat, Oktay Erdogan,
Zahid Mahmood, Noor-ul-Islam Khan,
Muhammad Atif Iqbal, Halil Tekerek,
Mehboob-ur-Rahman and Hafiz Muhammad Imran

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/intechopen.74513>

Abstract

The genus *Gossypium* provides natural fiber for textile industry worldwide. Genetic improvement in cotton for traits of interest is not up to mark due to scarcity of adequate information about fiber production and quality. Use of DNA markers for overcoming the issues of selection associated with complex traits is the ultimate choice which may lead to initiate breeding by design. Numerous marker-trait associations have been identified for economical traits using linkage analysis in cotton. Currently there is need for developing high-density genetic maps using next-generation sequencing approaches together with genome-wide association studies (GWAS). Efforts have been started in this direction and several QTLs including fiber quality, yield traits, plant architecture, stomatal conductance and verticillium wilt resistance were identified. This chapter narrates genetic diversity, QTL mapping, association mapping and QTLs related to fiber quality traits. The incorporation of various genomic approaches and previously described marker strategies will pave the way for increase in fiber production.

Keywords: cotton, fiber, association mapping, QTLs

1. Introduction

Cotton (*Gossypium spp.*) belongs to the genus *Gossypium*, family Malvaceae and order Malvales, and is known as an ultimate source to produce natural fiber. All over the world, cotton seed is one of the important sources of edible oil. Cotton provides raw material for millions of consumers as well as for industrial products throughout the world. Total impact of cotton in the textile industry continues to excel its importance (presently exceeding 500 billion US\$) [1].