

**FIBER DEVELOPMENT POTENTIAL OF
COTTON OVULES GROWN *IN VITRO* IS
RELATED TO BOLL LOCATION**

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Abstract

As boll load increases, abscission rates increase while growth and flowering decrease. Hypotheses have been proposed to explain boll abscission that involve assimilate concentration and supply. Differences seen in boll size and fiber properties related to mainstem location and position on a branch suggest assimilate supply depends on boll location. The potential sink strength of a particular boll location can be assessed around the day of anthesis by the use of cotton ovule culture. First position bolls were collected 30- to 48-h postanthesis from the lower, middle and top parts of greenhouse-grown cotton (*Gossypium hirsutum* L., DP50) plants and included pre cutout and cut out bolls. Ovules were excised and floated on a modified Beasley and Ting culture medium. The ovules from one boll were placed in a single petri plate. Plates were examined after 6 weeks. Fiber quality properties were measured by the Advanced Fiber Information System (AFIS). Fiber production (dry wt. fiber/plate) was less in top bolls than in lower bolls. Ovules from cutout bolls produced fiber in culture indicating that cutout boll locations have the potential for growth and development. Fibers from lower bolls had more secondary wall deposition than fibers from top bolls. The potential sink strength of ovules in culture was comparable to actual sink strength as measured by boll weights and fiber properties for equivalent greenhouse-grown bolls.