

**VARIATION AMONG COTTON CULTIVARS FOR  
THE NUMBER OF FIBER INITIALS PER SEED**

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**Abstract**

The number of lint fibers per seed is an important yield component of cotton (*Gossypium hirsutum* L.). An ability to produce a high number of fiber initials or mature a high proportion of initiated fibers would be a desirable trait; one that could possibly be exploited in a breeding program. A recently developed technique whereby fiber initials per ovule are counted at 2-d post anthesis was used to investigate the importance of fiber initials to lint yield per seed. A first study carried out over two years, showed differences of up to 27% among seven cultivars for the number of fiber initials. Some typically high yielding cultivars in North Carolina had below average number of fiber initials. A second study investigated the effects of boll position and environment on number of fiber initials and the relationship between fiber initials and mature lint fibers. In the three cultivars studied in detail (Stoneville 474, DES 119 and Georgia King), the number of fiber initials varied by 15% over boll position and environment; however rankings among cultivars were consistent. There was a strong negative correlation between the number of fiber initials and retention rates (number of mature fibers expressed as a percentage of fiber initials) such that differences among cultivars for fiber initials were proportionately larger than for mature lint fibers per seed. These results, together with other published studies showing negative correlations between the number and size (length and micronaire) of fibers, suggest that assimilate supply limits lint yield per seed. The apparent inability of cotton to convert a high number of fiber initials into a high number of mature fibers may explain why some cultivars with a relatively low number of fiber initials typically produce high yields. In light of the weak correlation between fiber initials and mature fibers per seed, direct selection for number of mature fibers per seed appears to be the most practical means of increasing fibers per seed.