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COVER CROPPING HISTORY INFLUENCE ON COTTON BOLL DISTRIBUTION, LINT YIELD, AND QUALITY Eric D. Billman B. Todd Campbell USDA-ARS

<u>Abstract</u>

Winter annual cover crops play an important role in southeastern US cotton production. Small grains such as wheat (Triticum aestivum L.) fill winter production gaps, minimize soil erosion and weed pressure, and provide doublecropping potential. However, other species have the potential to provide greater returns to the producer. One such species is carinata (Brassica carinata A. Braun), an oilseed crop grown primarily for biofuel production. Late harvest and high stover remnants for carinata, however, can potentially delay establishment of cotton and affect plant morphology. The objective of this research was to assess cotton boll distribution, lint yield, and lint quality when grown following three winter management systems: cotton-fallow, cotton-wheat, and cotton-carinata. This study was conducted at the Clemson Pee Dee Research and Education Center near Florence, SC, with cotton planted in June 2020. Plots followed a complete block design of four replications, all managed identically. Prior to harvest, plants were sampled from 1 m of row for end-of-season plant mapping and plant population assessment, then harvested for lint yield and subsampled for lint quality. Plant mapping results indicated that cotton-carinata had the greatest (P <0.001) total number of bolls (19 bolls/plant), as well as the greatest monopodial (2 bolls/plant) and sympodial (10 bolls/plant) bolls (P < 0.01) compared to cotton-fallow or cotton-wheat. However, lint yields between the cottonfallow (1027 kg/ha) and cotton-carinata (944 kg/ha) did not differ but were greater (P < 0.05) than the cotton-wheat treatment (805 kg/ha). Regarding lint quality, only small differences in micronaire were observed, with cotton-wheat (P < 0.05; 4.4) being the lowest. These results indicated that cotton following carinata significantly altered plant boll distribution but did not affect lint yield or lint quality compared to the fallow control, making carinata a suitable cover crop for pairing with cotton in the southeastern US.