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A Comparative Study on Indian and Greek Cotton Fiber Properties Correlations

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Abstract : The variability of cotton fiber characteristics has always been influenced by origin, weather conditions, method of culturing, and harvesting. Spinners work tirelessly to ensure consistent yarn quality by using the different origins of fibers to maximizes the profit margin. Spinners often fail to select desired raw materials of various origins to achieve an appropriate mixing plan due to the lack of knowledge on the interrelationship among fiber properties. The purpose of this research is to investigate the correlations among dominating fiber properties such as micronaire, strength, breaking elongation, upper half mean length, length uniformity index, short fiber index, maturity, reflectance, and yellowness. For this purpose, fiber samples from 500 Indian cotton bales and 350 Greek cotton bales were collected and tested using the high volume instrument (HVI). The fiber properties dataset was then compiled and analyzed using python 3.7 to determine the correlations matrix. Results show that Indian cotton fiber have highest correlation between strength-mat = 0.84, followed by SFI-Unf =-0.83, and Neps-Unf = -0.72. Greek cotton fiber, in contrast, have highest correlation between SFI-Unf =-0.98, followed by SFI-Mat = 0.89, +b-Len = 0.84, and Str-Mat = 0.74. Overall, the Greek cotton fiber showed a higher correlational matrix than compared to that of Indian cotton fiber.

Keywords : cotton fiber, fiber properties correlation, Greek cotton, HVI, Indian cotton, spinning
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