of yarn under investigation. The overall trend is that an increase in bamboo content decreases yarn tenacity. Here again, 50:50 blended yarns show values that are comparable with those of 100% cotton yarn for all three sets of yarn.

The influence of bamboo content in blended yarn on yarn elongation is displayed in ***Figure 1.f***. The decrease in elongation with an increase in bamboo content is clearly visible. The elongation of 50:50 blended yarns is seen to be similar to that of 100% cotton yarn, irrespective of the yarn linear density.

While the overall trend appears to indicate that the bamboo content distinctly influences yarn properties, it may also be observed that the properties of the 33:67 blend show values that appear to deviate from the trend, especially in the case of the number of neps and yarn tenacity. The cause of the visible departure from consistency is not clear at present, and more elaborate work will need to be done to ascertain the reasons. Moreover further work is planned for a study of the comfort properties of knitted fabric produced from these yarns.

Conclusions

The following conclusions were arrived at from the above study.

- An increase in the bamboo content of bamboo:cotton blended yarn has a significant influence on the overall quality of the yarn in terms of yarn imperfections and mechanical properties, such as strength and elongation, for the linear density of yarns studied.
- It is also interesting to note that the quality of 50/50 bamboo/cotton blended yarn is most closely comparable with that of 100% cotton yarn. Hence it would seem advisable to blend cotton with bamboo to obtain the necessary fabric comfort rather than opting for 100% bamboo, which has less desirable properties and is also not cost-effective.

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References

1. *Duckett K. E., Goswami B. C., Ramey H. H., Jr.; 'Mechanical Properties of Cotton/ Polyester Yarns', Textile Research Journal, Vol. 49, 1979 pp. 262-267.*
2. *Gupta D. K., Shiekl A. E.; 'The Mechanics of Blended Yams', Applied Polymer Symposia, Vol. 27, 1975 pp. 295-315.*
3. *Svetnickienė V., Čiukas R.; 'Investigation of Friction Properties of Yarns from Natural Fibres', Mechanika, Vol. 1(75), 2009 pp. 73-76.*
4. *Béchir Azzouz, Mohamed Ben Hassen and Faouzi Sakli; 'Adjustment of Cotton Fibre Length by the Statistical Normal Distribution: Application to Binary Blends', Journal of Engineered Fibres and Fabrics, 2008 pp. 35-46.*
5. *Pınar Duru Baykal, Osman Babaarslan Rızvan Erol, 'Prediction of Strength and Elongation Properties of Cotton/Polyester-Blended OE Rotor Yarns', Fibres & Textiles in Eastern Europe, Vol. 14, No. 1(55), 2006 pp. 18-21.*
6. *Pan N., Chen K., Moneg C. J., Backer S.; 'Studying the Mechanical Properties of Blended Fibrous Structures Using a Simple Model', Textile Research Journal, Vol. 70(6), 2000 pp. 502-507.*
7. *Jianchun Z., Peixing F.; 'Predicting the Tensile Strength of Lyocell/PET Blended Yarns', ITB International Textile Bulletin, Vol. 6(99), 2004 pp. 28-30.*
8. *Pan N., Postle, R.; 'Strengths of Twisted Blend Fibrous Structures: Theoretical Prediction of the Hybrid Effects', Journal of the Textile Institute, 1995 pp. 559-580.*
9. *Kemp A., Owen J. D.; 'The Strength and Behaviour of Nylon/Cotton Blended Yarns Undergoing Strain', Journal of the Textile Institute, Vol. 46, 1995 p. T-684.*
10. *Ratnam T. V.; 'Prediction of the Quality of Blended Yarns from that of the Individual Components', Textile Research Journal, Vol. 38, 1968 pp. 360-365.*
11. *Bojun Xu, Jion Ma; 'Radial Distribution of Fibres in Compact-Spun Flax-Cotton Blended Yarns', Fibres & Textiles in Eastern Europe, Vol. 18, No.1 (78), 2010 pp. 24-27.*

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