es from any number of bales in a warehouse. The method of bale management proposed is more realistic and capable of handling the imprecision that may be present in the boundaries between adjacent classes of cotton bales.

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References

1. Mogahzy YEE, Broughton R and Lynch WK. A Statistical Approach for Determining the Technological Value of Cotton Using HVI Fibre Properties. *Tex Res J.* 1990; 60: 495-500.
2. Kang BC, Park SW, Koo HJ and Jeong SH. A Simplified Optimization in Cotton Bale Selection and Laydown. *Fibers and Polymers* 2000; 1: 55-58.
3. Majumdar A, Sarkar B, Majumdar PK. Determination of the Technological Value of Cotton Fiber: A Comparative Study of the Traditional and Multiple-Criteria Decision-Making Approaches. *Autex Res J.* 2005; 5(2): 71-80.
4. Majumdar A, Sarkar B and Majumdar PK. A New Algorithm of Cotton Fibre Selection and Laydown Using TOPSIS Method of Multi-Criteria Decision Making. *Indian J Fibre Tex Res.* 2006; 31: 248-255.
5. Militky J. Proceedings of Beltwide Cotton Conferences, San Antonio, USA, 2006.
6. Xu B, Fang C and Watson MD. Clustering Analysis for Cotton Trash Classification. *Textile Res J.* 1999; 69: 656 – 662.
7. Lieberman MA, Patil RB. Clustering and Neural Networks to Categorize Cotton Trash. *Optic Eng.* 1994; 33: 1642-1653.
8. Ghosh A, Majumdar A, Das S. A Technique of Bale Lay down Using Clustering Algorithm. *Fibers and Polymers* 2012; 13(6): 809-813.
9. Zadeh L A. Fuzzy Sets, Information & Control 1965, 8, 338-353.
10. Ross TJ. *Fuzzy Logic with Engineering Applications*, 2nd Edition, John Willey & Sons (Asia) Pte. Ltd., Singapore, 2005.
11. Johnson RA and Wichern DW. *Applied Multivariate Statistical Analysis*. 6th ed., Pearson Prentice Hall, New Delhi, 2008.
12. Anderson TW. *An Introduction to Multivariate Statistical Analysis*. 3rd Ed., John Wiley, New York, 2003.
13. Bezdek J. *Pattern Recognition with Fuzzy Objective Function Algorithms*. Plenum, New York, 1981.

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