Digital image processing based identification of nodes and internodes

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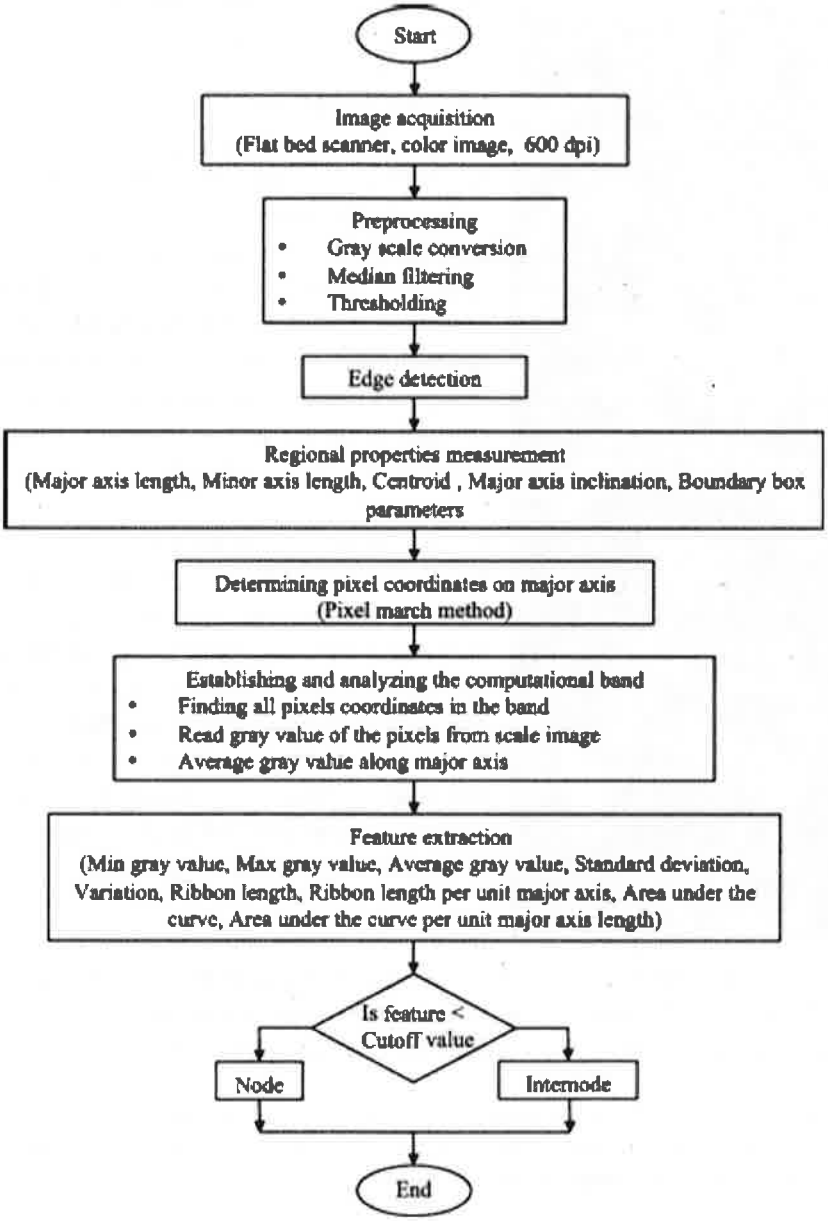
In respect to converting grass into biofuel, the chemical composition of various parts of grass plants differ and this has consequences for the efficiency of converting grass into biofuel.



Even different parts of stem nodes and internodes vary considerably in chemical composition and if grass can be coarsely ground then stem nodes and internodes separated, conversion of these stem parts into biofuel can be more efficient.

Therefore, this study evaluated the use of digital image analysis to identify and quantify grass stem nodes and internodes using stems of big bluestem, corn and switchgrass.

Unit area under a normalized gray value curve was found to be very effective and the best parameter for identification of nodes and internodes for these grasses.

This image processing methodology can be the supporting software for the hardware systems that perform the physical separation of node and internode portions of grass.

Pothula, A.K., Igathinathane, C., Kronberg, S.L., Hendrickson, J.R. 2014. Digital image processing based identification of nodes and internodes of chopped biomass stems. Computers and Electronics in Agriculture. 105:54-65.

http://www.sciencedirect.com/science/article/pii/S016816991400088X