

**Title** The effect of three renewable bioplastics and biodegradable material on quality and shelf life of celery due to differences in film permeability

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### **Abstract**

This research analyzes the effect of three renewable bioplastics and biodegradable material on quality and shelf life of celery due to differences in film permeability. Materials consist of three variables and one control. The variable materials include Polylactic Acid (PLA), a versatile biodegradable aliphatic polyester derived from 100% renewable resources, Ecoflex, a biodegradable aliphatic-aromatic copolyester, and Mater-bi, a bio-plastic derived mainly from natural, renewable resources such as corn, wheat, and potato starch. Whole celery stalks packaged into sleeves made from the above materials are subjected to refrigeration conditions and bi-weekly analysis for three months or until end of shelf life. The analysis includes appearance, weight loss, microbiology, sensory, texture, and petiole color. Preliminary sensory analysis demonstrate strong competition against the control on critical sensory attributes. Ecoflex ranked higher than the control by almost 4% points during an unstructured scale analysis if the aroma profile. Similarly, three was strong competitive performance amongst the three biodegradable materials against the control in the ranking for texture profile. Both Mater-Bi and Ecoflex outcompeted and ranked higher than the control by over 7% points in appearance profile.