**Hydraulic Analysis of Biodegradable Drip Irrigation Laterals**

**Harby MOSTAFA**

Agricultural Engineering Department, Faculty of Agriculture, Benha University.

13736 Moshtohor, Kalubia, Egypt

Harby.mostafa@fagr.bu.edu.eg

# Abstract

Since the irrigation laterals are usually removed at the end of the crop season, it would be desirable, especially for the vegetables, to use biodegradable irrigation drip lines that would allow roto-tilling of these materials after the end of the cultivation season, without the need to remove the laterals.

This study was conducted to find out and evaluate the effect of using biodegradable tubes (Biotube, made from Bi-OPL bioplastic) on water distribution uniformity comparable with polyethylene tubes (Polytube) at various working heads. Results showed the coefficient of uniformity (UC), the emission uniformity (EU) and increased head losses whereas, coefficient of variation (CV) decreased with increasing heads when considered for both types of drip tubes. UC was achieved to almost 98.1% with Biotube and 98.2% for Polytube at 7 m. CV was 2.19 % for Biotube and 2.1% for Polytube with the head increasing to 7 m. The head losses ranged from 0.004 to 0.011 m for both drip tubes. All evaluation parameters changed insignificantly at the same head for both Bio and Polytubes. Results provided by empirical evidence the Biotubes could improve the water distribution uniformity of drip irrigation system the same as Polytubes. Thus, the technological improvement offers the potential for environment protection and introduces alternative materials employed in irrigation technology.

**Keywords:** bioplastic, irrigation uniformity, hydraulic, drip tubes.