Introduction

The dairy industry in Whatcom County is a significant component of its agricultural industry. In order to ensure the continuing value of this commodity, new management techniques need to be investigated and implemented to sustain the economic viability of this industry. One area of interest is anaerobic digestion, a closed system of composting that uses anaerobic bacteria and enzymes to break down organic molecules, which release carbon dioxide and methane gas. In the PNW, energy prices are low and additional revenue sources from digested fiber, a byproduct, are necessary for economic feasibility of on-farm anaerobic digestion.

Working with local greenhouse growers, several research projects, using multiple greenhouse crops, have been developed to investigate the use of digested fiber as a greenhouse potting soil component comparable to peat moss. The development of this market has the potential to export more manure off the farm into areas that can benefit from such nutrients and create another profit margin for dairy producers.

Materials & Methods

Digested separated dairy solids were purchased from a dairy facility operating a anaerobic digester in Wisconsin. The following research trials were completed during the 2004 bedding plant production season. All experimental plants were grown to industry standards and data was collected once plants reached marketable maturity. All treatments were replicated four times and placed in a randomized complete block design. Experimental treatments used were based on methods of acidification in order to make material more compatible for container production.

On-Farm Trial #1

Crop: Petunia Dreams Midnight

Data Collected:
Plant height, leaf greenness (SPAD), fresh weight, physical properties, soil fertility at planting/harvest and plant tissue analysis.

Treatments:
• Control – 80% peat moss, 20% pumice
• Treatments #1-5 – 70% digested fiber, 30% pumice
On-Farm Trial #2

Crop: Petunia Ultra White

Data Collected:
Plant height, flower length, leaf greenness, fresh/dry weight, physical and chemical properties.

Treatments:
Control – 70% peat moss and 30% pumice
Treatments #1-5 – 70% digested fiber and 30% pumice.

On-Farm Trial #3

Crop: Zonal Geranium Red

Data Collected: Plant height, plant width, leaf greenness (SPAD), fresh weight, number of flowers, physical properties, soil fertility at planting/harvest and plant mineral analysis.

Treatments:
• Control – 80% peat moss and 20% pumice
• Treatments #1-3 – 70% digested fiber and 30% pumice

Results

Means separation between treatments by Tukey at $P < 0.05$. NS denotes no statistical difference.