



Using the Black Soldier Fly to Reduce Manure Accumulation in Dairy Calf Facilities in Comanche County, Texas

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Introduction

The black soldier fly, *Hermetia illucens* (L.), (Figure 1) is a known colonizer of decomposing materials, such as manure. Past research has focused on the use of this fly to reduce manure accumulation in livestock and poultry facilities. Results from these studies indicate that augmentation of black soldier fly larval populations in poultry manure can result in a 50% reduction in manure accumulation and 94 to 100% suppression of house fly populations. However, it is not known if augmentation of this fly in dairy calf facilities will result in the same results.



Figure 1. Female black soldier fly laying eggs.

Objectives

Determine if inoculating dairy calf manure with black soldier fly larvae will reduce:

1. house fly populations
2. manure accumulation
3. the amount of phosphorous and nitrogen in the manure.

As well as determine,

4. the ability of two rates of Prozap to suppress house flies.

Materials and Methods

Experimental design

Sixteen newly born calves placed individually in calf hutches (Figure 2) located linearly at a dairy in Comanche County were selected for this study. Using a block design the calves were assigned to one of the following treatments resulting in four replicates per

treatment. The treatments were as follows, 1) inoculation with soldier fly larvae, 2) sprayed weekly with 1 cup Prozap/100 sq feet (label information: http://www.clarkpest.com/pestmaterials/labelsmsds/Prozap_Insectrin_Concentrate_Label.pdf), 3) sprayed weekly with 1 pint Prozap/100 sq feet, 4) no treatment (control).



Figure 2. Calves in hutches on dairy in Comanche County that were used in study.

Manure-catch trays (Figure 3) measuring 3 x 4 feet were placed beneath each calf hutch. These trays were weighed weekly to determine manure accumulation per calf.

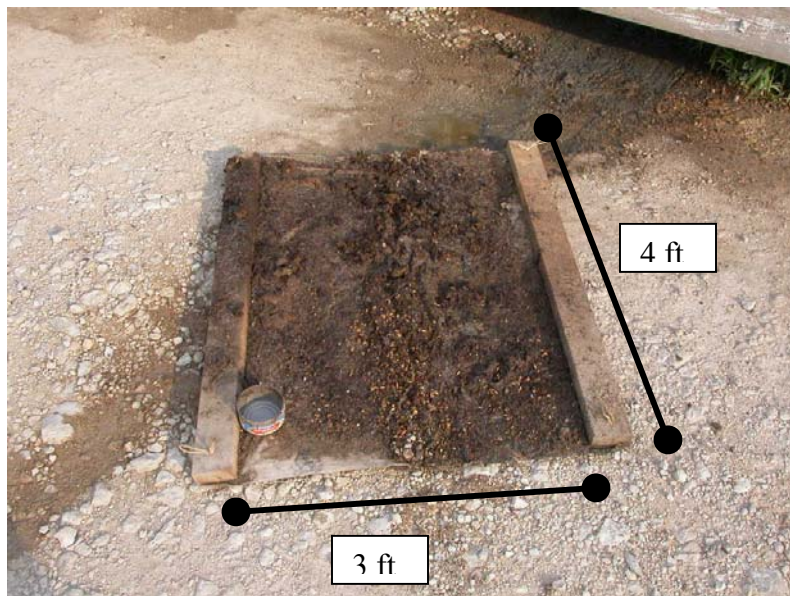


Figure 3. Manure-catch trays (3 x 4 ft) used in black soldier fly study.

Variable Measurements

The trays were placed individually beneath the calves on 21 July 2003. After allowing the manure to accumulate for two weeks, treatments were initiated.

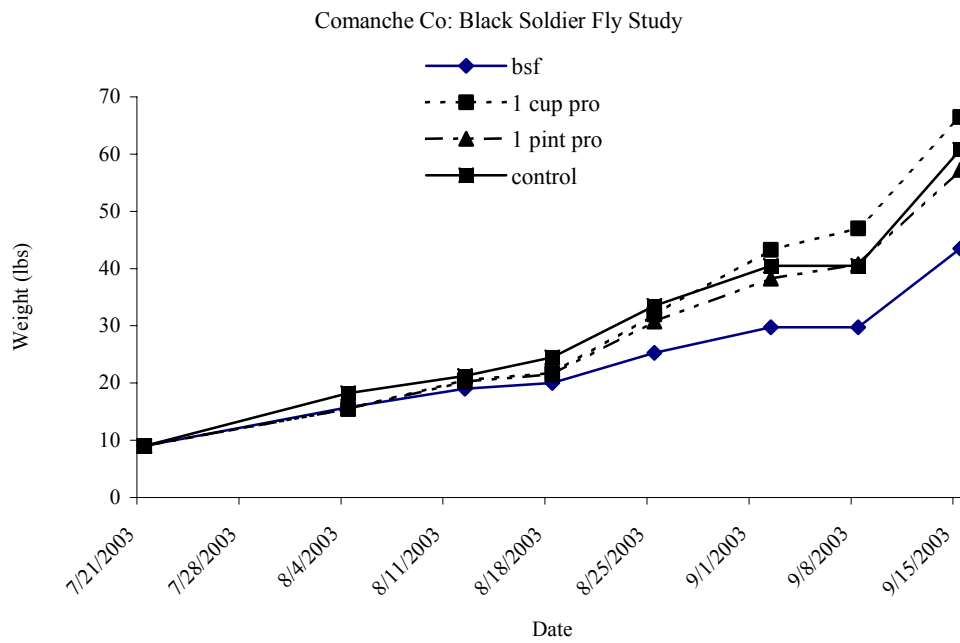


Figure 1. Weekly weights of calf manure per treatment.

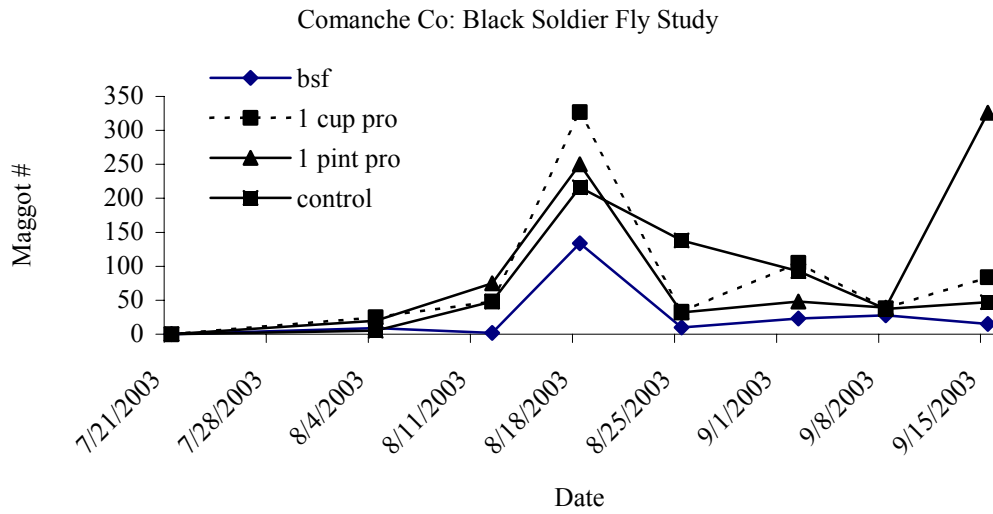


Figure 2. Weekly mean house fly maggot counts per treatment.

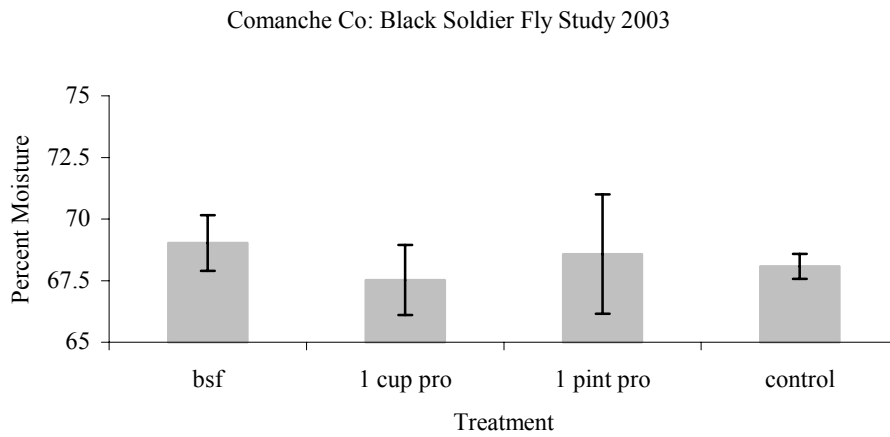


Figure 3. Final percent moisture \pm SE of calf manure per treatment.

Comanche Co: Black Soldier Fly Study

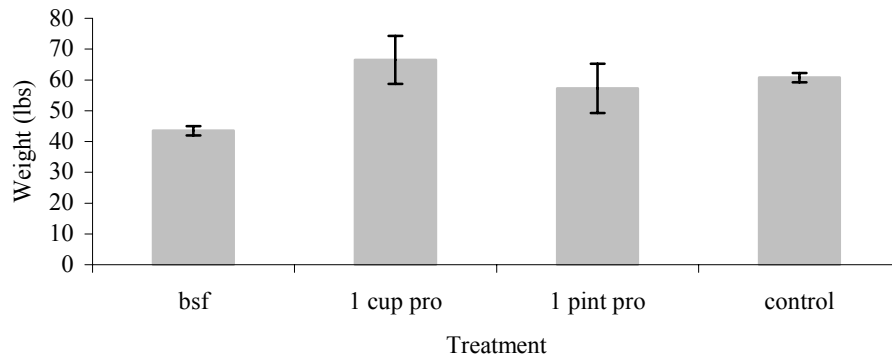


Figure 4. Final weight \pm SE of calf manure per treatment.

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