

#### Compose Council of Canada Compose Council of Canada Compose Matters in Ontario February 5<sup>th</sup> & 6<sup>th</sup>, 2020 Niagara Falls History Museum 5810 Ferry Street, Niagara Falls

## INSECT FRASS - CURRENT RESEARCH IN FERTILIZATION AND SOIL AMENDMENT FROM AN ACTIVE ONTARIO CRICKET FARM

Dr. Jarrod Goldin, Entomo Farms

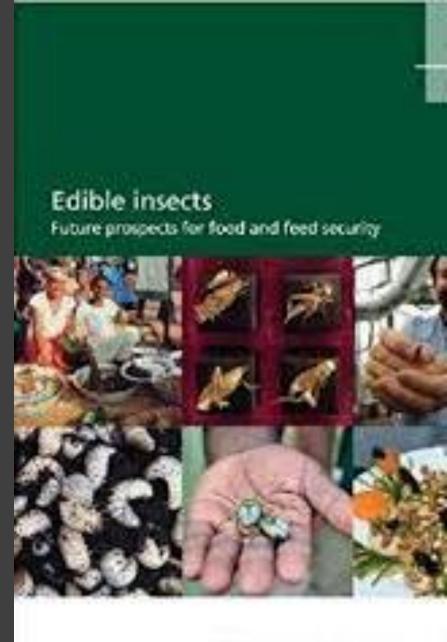


# ENTOMOPHAGY



## WHAT GOT US STARTED:

- Mark Cubin Invests on Shark Tank
- Clinton Global Initiative Awards a \$1 million prize
- Brother's Darren and Ryan farm insects for Reptile Feeders







**Complete Protein:** All essential amino acids

Nutrients: Zinc, B-12, iron, copper, etc. **Minimal Resources:** 

Efficient feed conversion ratio means fewer land and water resources are used for production

## Gut Microbiome:

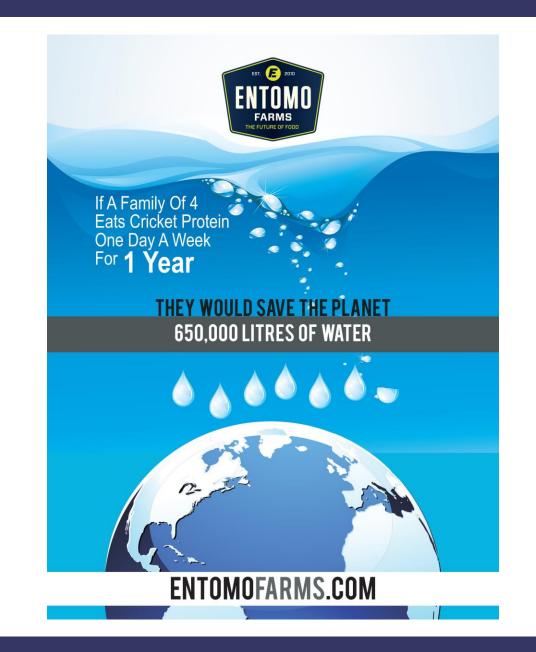
10% chitin (prebiotic fibre)

### Immunity Boost:

Antibacterial and antimicrobial peptides

### Low Carbon:

Crickets do not produce methane and have a carbon footprint better than chicken.



## Academics around the world are launching research on the health benefits of entomophagy





### JEAN MAYER USDA HUMAN NUTRITION RESEARCH CENTER ON AGING

## 60,000 square feet 100 million crickets

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# **Open concept, "free range"**

# **Darren Goldin**

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BUGS YOU OF PROTEIN PER BAG ("45 Per Los serving)

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880

HRPS BUGS YOU **OF PROTEIN** 

PER BAG (\*4g per 1 oz serving)

CHEDDAR

BUGS YOU OF PROT PER BAG (\*4g per 1 oz

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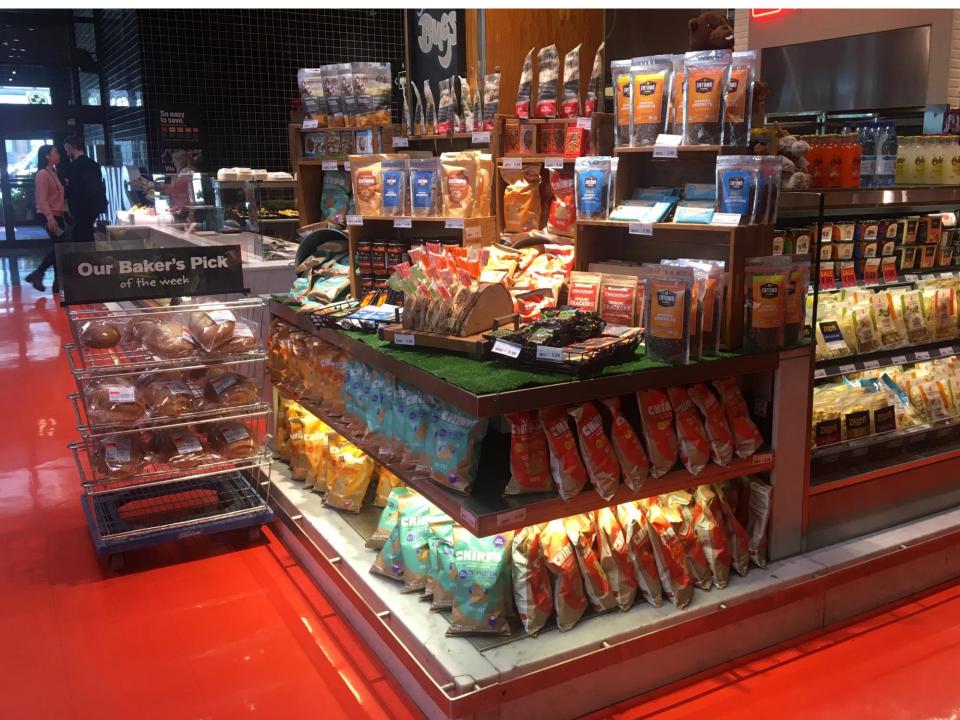
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SEA SALT

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# SERVE THE WORLD Turn the table. Eat sustainable.

Loblaws

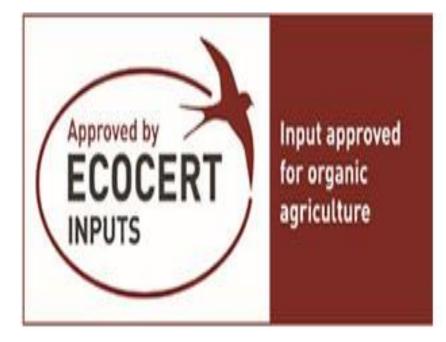


# What is FRASS?

Frass Forward is made of insect manure, a unique fertilizer that is an organic, sustainable and natural food for plants.

# **IS FRASS ORGANIC?**

- Approved for Organic Agriculture programs, it is safe for the environment around ponds and waterways, pets and people.
- Frass is slow release and will not wash away like chemical fertilizers do.



# THE CHEMISTRY OF FRASS



#### **Guaranteed Analysis**

Total Nitrogen (N)	6.97%
Nitrogen (Insoluble)	4.27%
Available Phosphorus (P2O5)	4%
Soluble Potassium (K20)	3.2%
Calcium	3.55%
Iron	0.12%
Magnesium	0.66%
Manganese	0.01%
Molybdenum	0.0003%
Sodium	0.15%
Sulphur	0.53%
Zinc	0.013%





#### TRIALS OF CRICKET FRASS AS AN EFFECTIVE FERTILIZER

Report on the results of experiments in 2018 on the effects of Frass additions to hay fields on yields and chemical composition of the hay and soils

Research done by Professor Tom Hutchinson Professor Emeritus, Trent University

with assistance from Yeukai Katanda Doctoral Candidate at Trent University



### DOES IT WORK/RESEARCH

- The response to the Frass amendments was large and striking as the plots produced dark green, very healthylooking vegetation in comparison to the controls
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- In terms of yield measured as fresh cut weight, the highest positive response was at the 1.25 kg per plot with an increase over control of 548% or a yield per plot 5.5 time that of the control.
  Even at the lowest Frass application rate of 0.31 kg per plot, the yield increase was 219%, i.e. 2.2 times as much hay.
  These are spectacular results.



### RESPONSE OF SIX VEGETABLES TO FRASS AMENMENTS

Prepared from research by Professor Tom Hutchinson, Professor Emeritus, Trent University School of the Environment

> with assistance from Willow Denis, MA Candidate at Trent University





## **RESULTS:**

For the tomatoes, differences in appearance occurred from 2-3 weeks from planting onward. There were darker, shorter, bushier plants in the higher Frass treatment. This persisted pretty much to the final planting, where these higher Frass treated plants flowered in general some days earlier than the controls.

By July 15th, the green beans treated with both Frass application rates were growing slightly taller than the controls and were sending out larger runners.

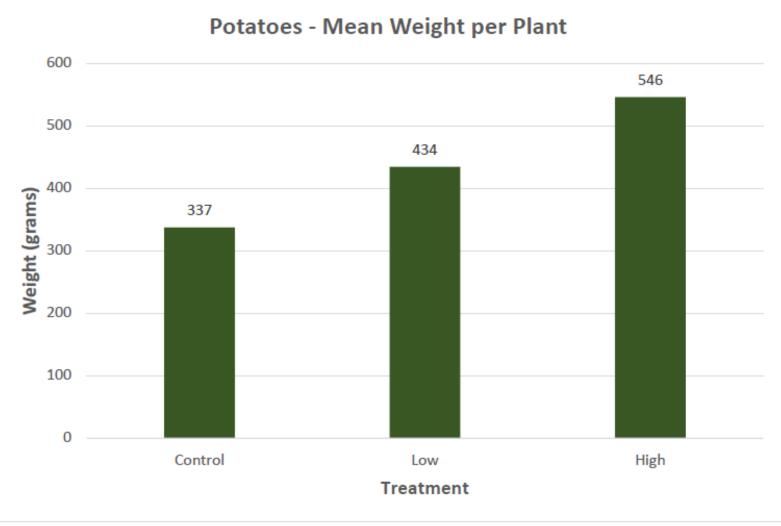


Figure 3. Mean weight per plant in grams for three Frass treatments of potatoes.



## **RESULTS:**

- In many cases, quite large differences could be seen between replicate plots of the same treatment.
- From a consumer perspective, all the varieties except for corn produced good and acceptable harvests and the edible product was deemed excellent by the consumer.





# **RETIAL BRANDS**



## Thank You!

## Dr. Jarrod Goldin

Email: jarrod@entomofarms.com