Producing Tobacco To Meet Customer Needs: II. *Evaluation of Organic Fertilizers for Seedling Production in the Float System*

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Contract Purchasing[1]

- Increased efficiency in purchasing.
- Improved quality.
- Improved communication between buyer and producer.
- Increased accountability.
- Production of unique types and tobacco for specialty uses.

1 = 80-85% of sales in 2001-02

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Materials and Methods

- Treatments
  - 1) 16-5-16 water soluble (control)
  - 2) 8-4-1 bat manure
  - 3) 13-8-2 Peruvian seabird guano
- RCB design with 4 replications. Cultivar = K 326.
- One 288-cell tray per 20 L waterbed.
- Fertilizers added at seeding and 4 weeks later to supply 125 ppm N
- Seeded 4/11/02 and completed 6/10/02 (59 days).

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Materials and Methods

- Measurements
  - Total plant stand, usable transplants, seedling fresh weight, seedling dry weight, seedling stem length (at 59 days after seeding).
  - Plant tissue analysis (MRML and whole plant) at 59 days after seeding.
  - Water samples 2x week for pH and nutrient analysis.

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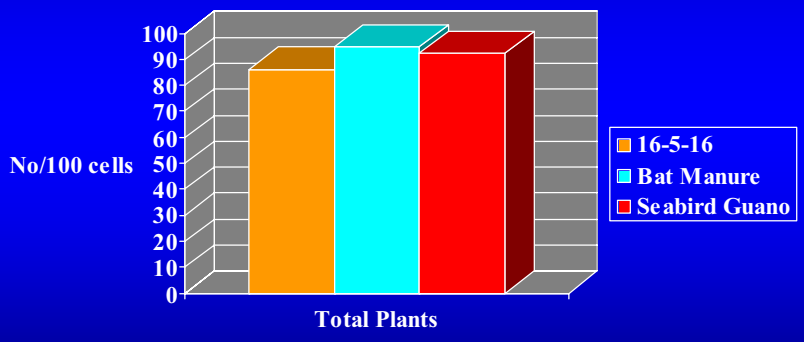
Effect of Fertilizer Material on Total Plants at Day 59



LSD= NS

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Effect of Fertilizer Material on Seedling Fresh Weight at Day 59

LSD= 8.4

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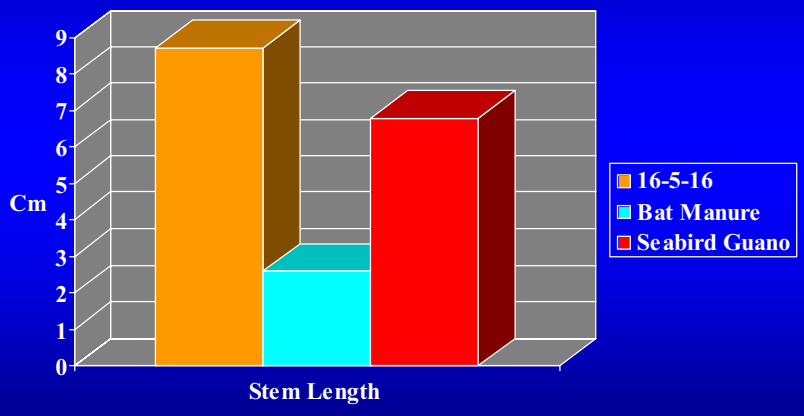
Effect of Fertilizer Material on Seedling Stem Length at Day 59



LSD= 2.0

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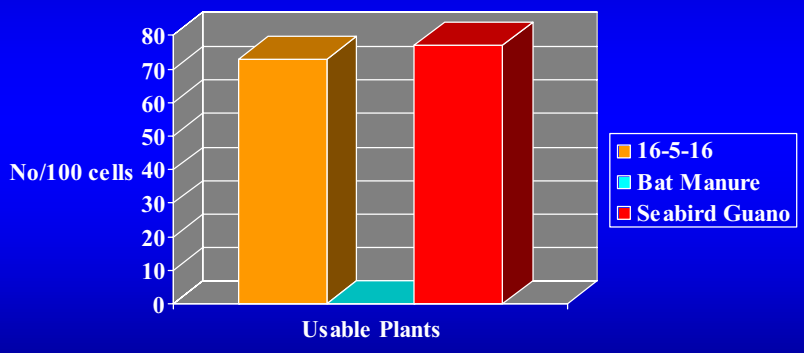
Effect of Fertilizer Material on Usable Transplants at Day 59



LSD= 10

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Effect of Fertilizer Materials on Seedling Growth

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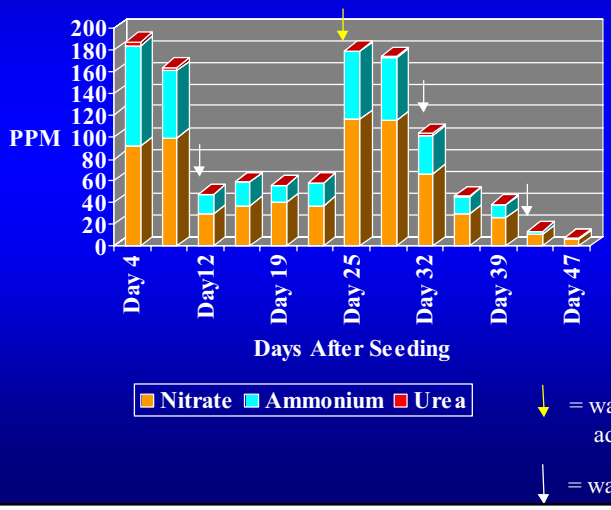
Nitrogen Levels in Float Bed 16-5-16



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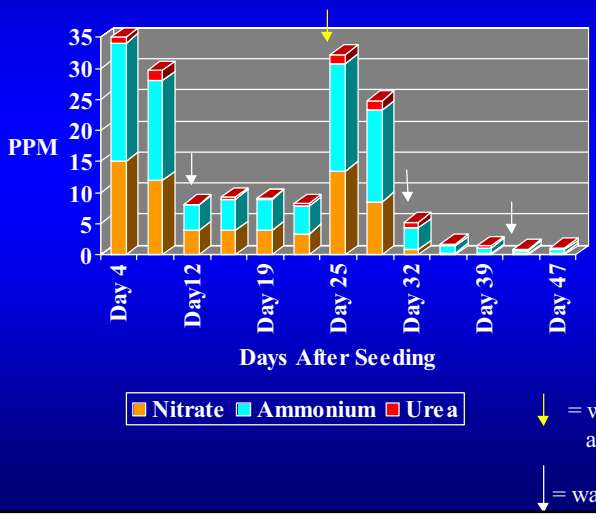
Nitrogen Levels in Float Bed Bat Manure (8-4-1)



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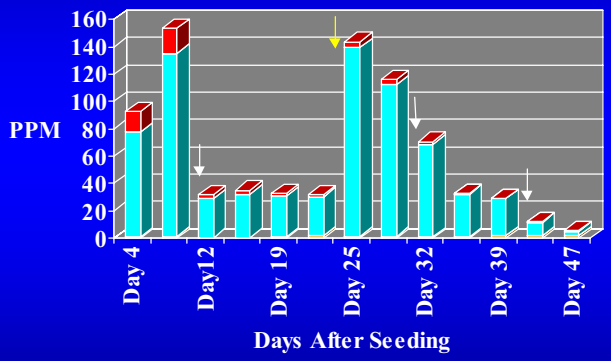
Nitrogen Levels in Float Bed
Peruvian Seabird Guano (13-8-2)



= water & fert. added

= water added

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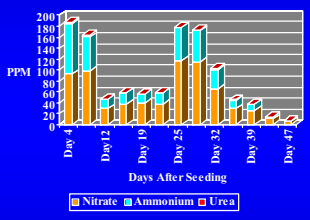
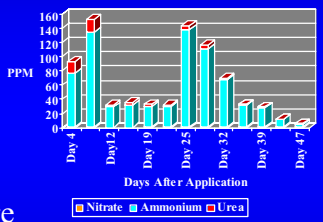
Nitrogen Levels in Float Bed
From 3 Fertilizers

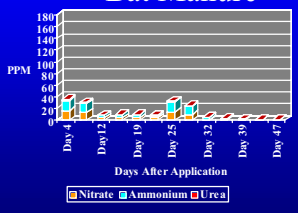
16-5-6



Seabird Guano



Bat Manure



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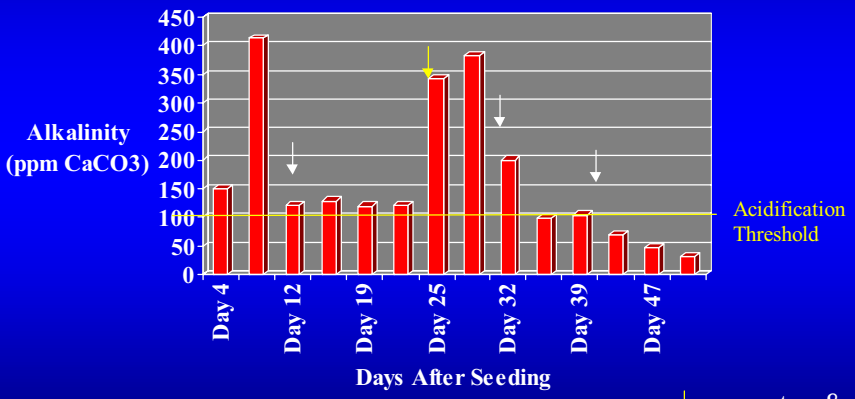
Effect of Seabird Guano on Waterbed Alkalinity



↓ = water & fert. added

↓ = water added

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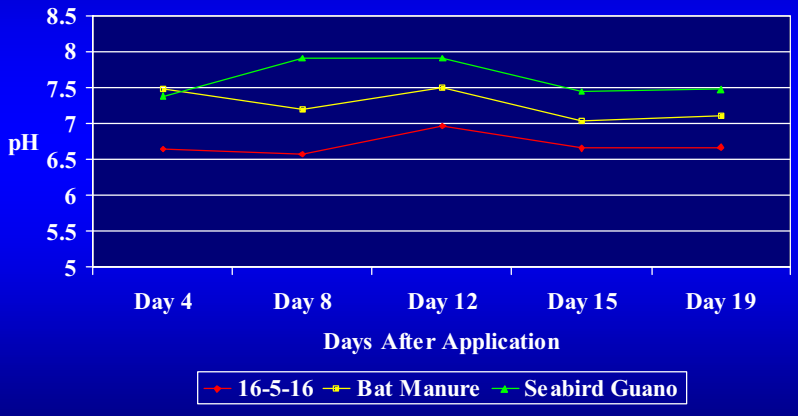
Effect of Fertilizer Material on Waterbed Ph



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Effect of Fertilizer Material on Nutrient Concentration in Plant Tissue

Treatment	Nitrogen	Phosphorus	Potassium
		-Percent-	
16-5-16	1.54	.44	3.33
Bat Manure	0.71	.35	2.64
Sea. Guano	1.53	.50	3.39
LSD (0.05)	0.37	0.08	NS

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Effect of Fertilizer Material on Nutrient Concentration in Plant Tissue

Treatment	Calcium	Magnesium	Sulfur
		-Percent-	
16-5-16	0.70	0.86	0.51
Bat Manure	1.35	0.41	0.28
Sea. Guano	1.21	0.61	0.50
LSD (.05)	0.16	.033	0.08

Summary

- Bat manure had a good ratio of NO_3-N to NH_4-N. However, only 25% of labeled N was available in mineral form.
  - No usable transplants were produced.
  - Too expensive to use at a 4x rate.

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Summary

- Preliminary results indicate that Seabird Guano is preferable to Bat Guano as organic fertilizer source.
- Seabird Guano was nearly 100% NH_4-N.
  - Slightly smaller seedlings, but acceptable transplant production (vs. 16-5-16).
  - Will high HCO_3 be a problem in normal production period with reduced evapotranspiration (i.e. less dilution)?

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Production Costs

Fertilizer	Cost/Kg Fertilizer	Cost/Kg Nitrogen	Cost/Ha Transplants
16-5-16	$2.20	$14	$4.42
8-4-1 (Bat Manure)	$6.16	$77	$24.80 ($99.20)
13-8-2 (Seabird)	$5.87	$45	$14.70