

Evaluating Slow Release N Fertilizer and an Organic Fish/blood Meal Product for Wetland Taro Production

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Objective and Experimental Layout

- Evaluate the effect of slow release N fertilizer and organic fish/blood meal fertilizer on taro yield, nitrogen use efficiency (NUE), and economic feasibility.

FP

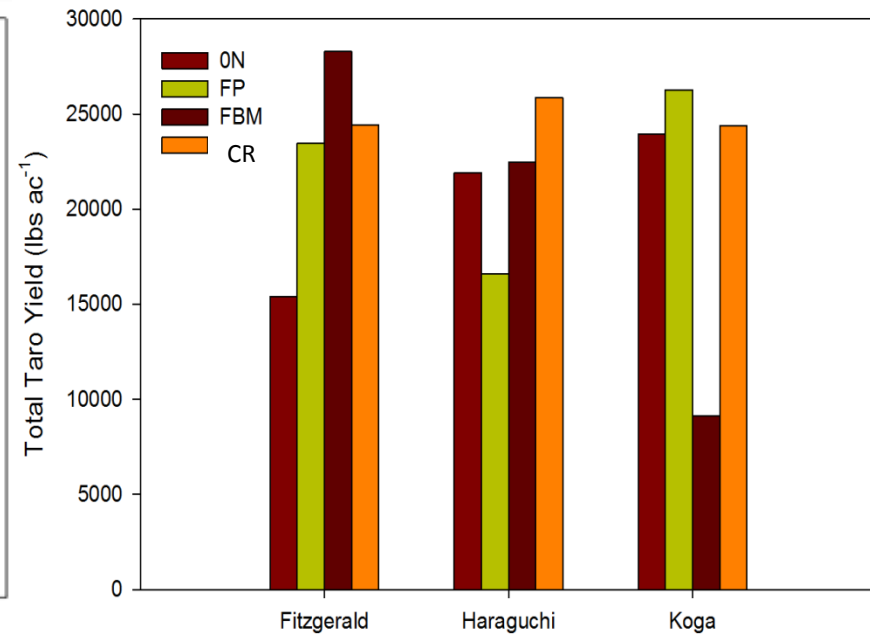
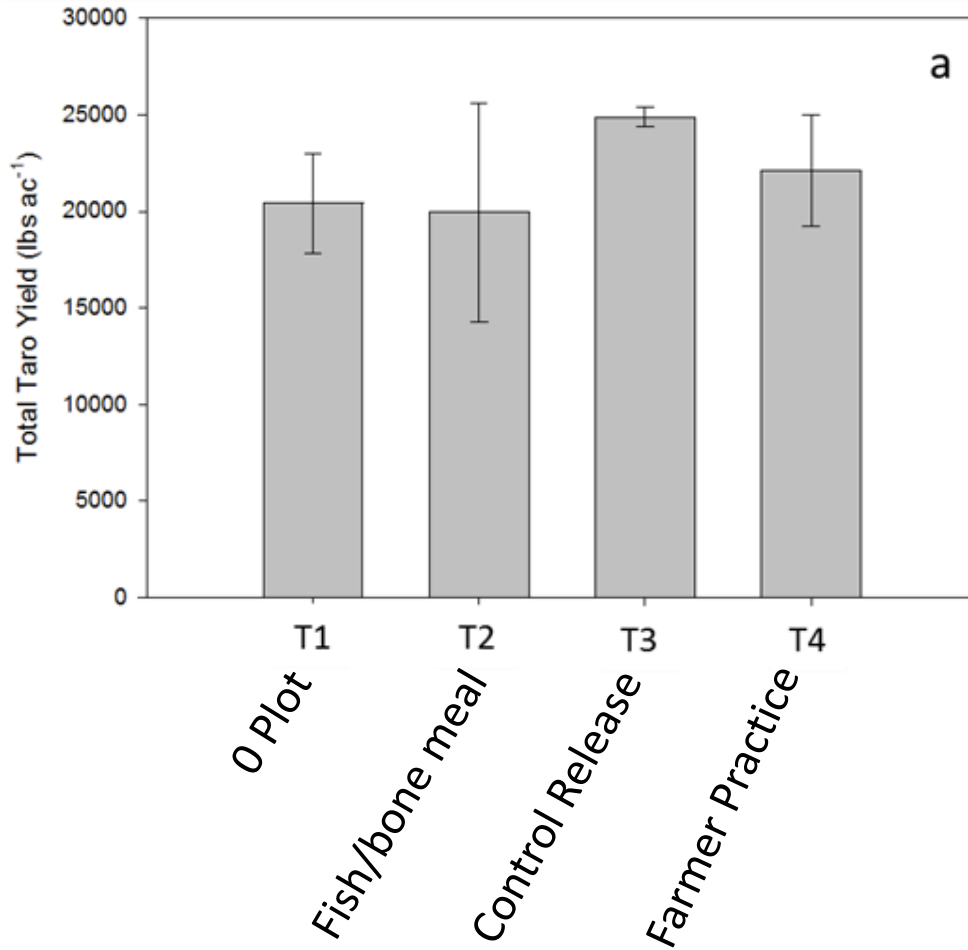
SRN

FBM

ON



Fertilizer Effects on Taro Yield

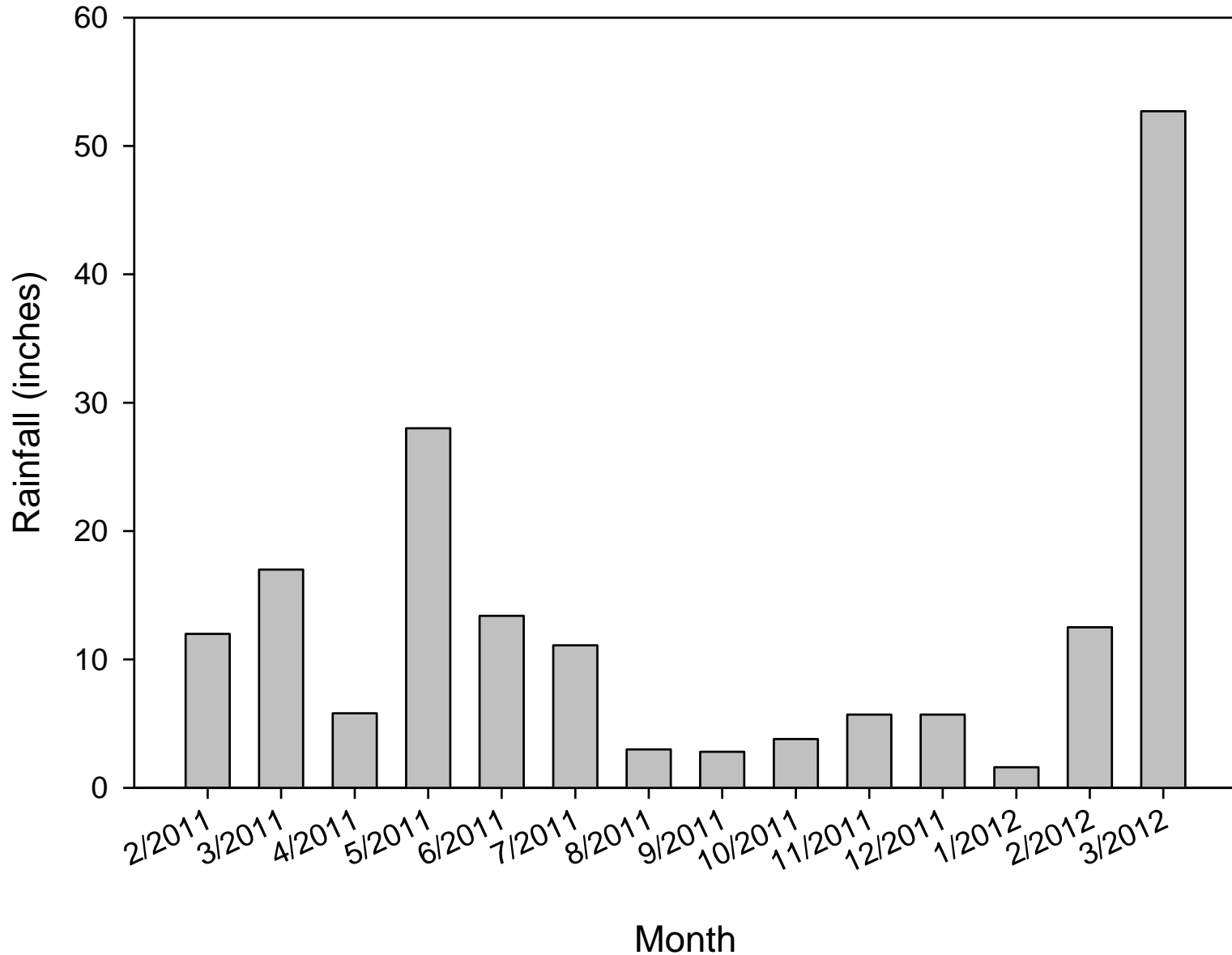


- No statistically significant effect
- CR fertilizer produced consistent yield

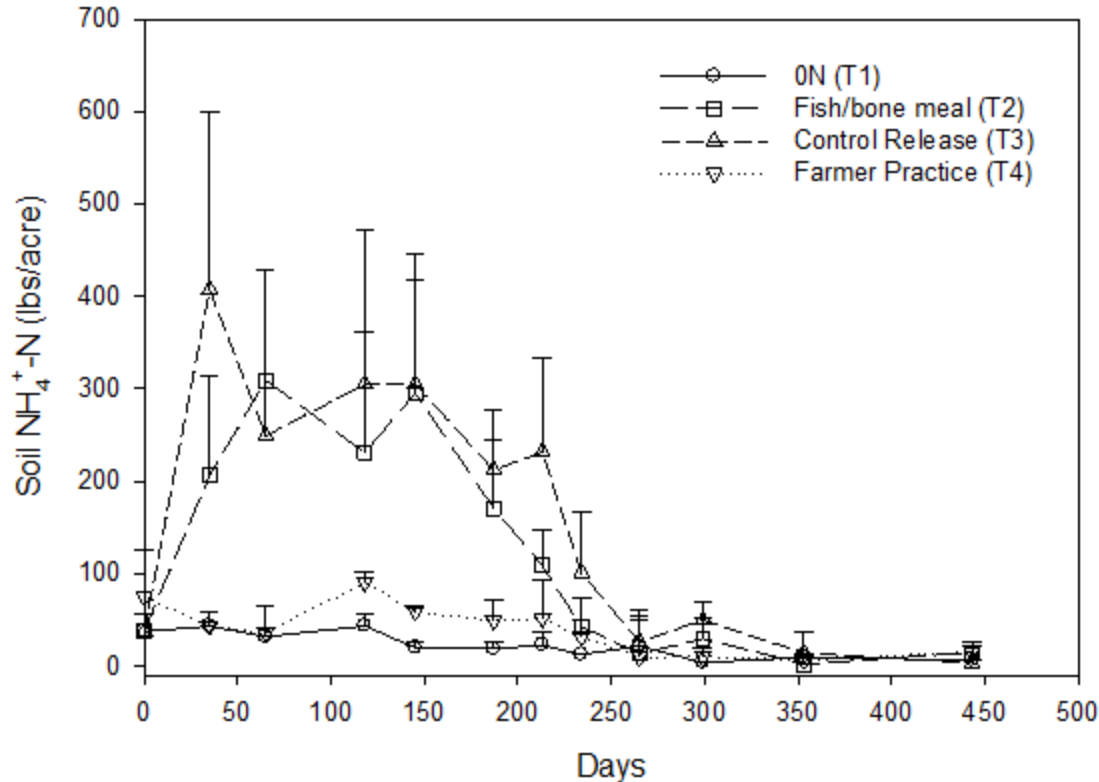
Heavy *phytophthora* incidence



Unusually high rainfall (175")

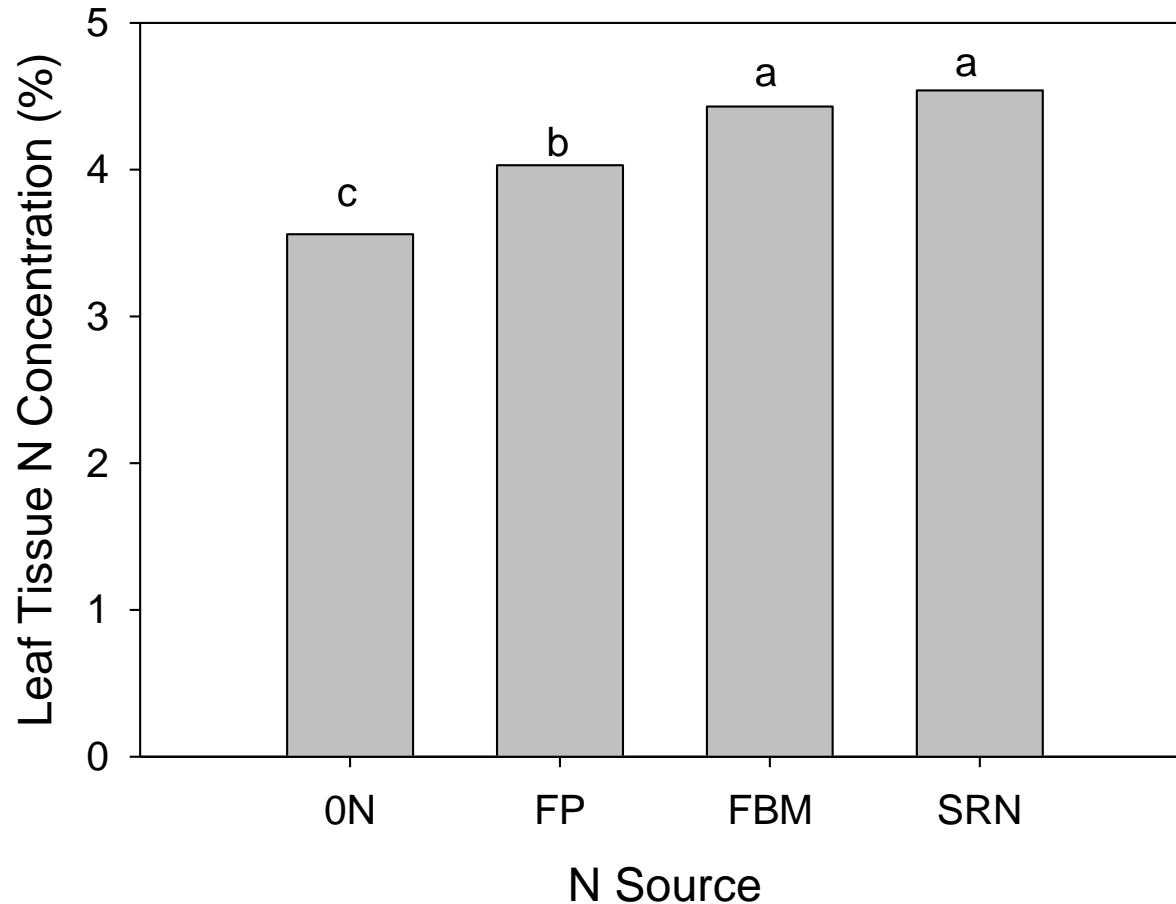


Soil $\text{NH}_4^+\text{-N}$



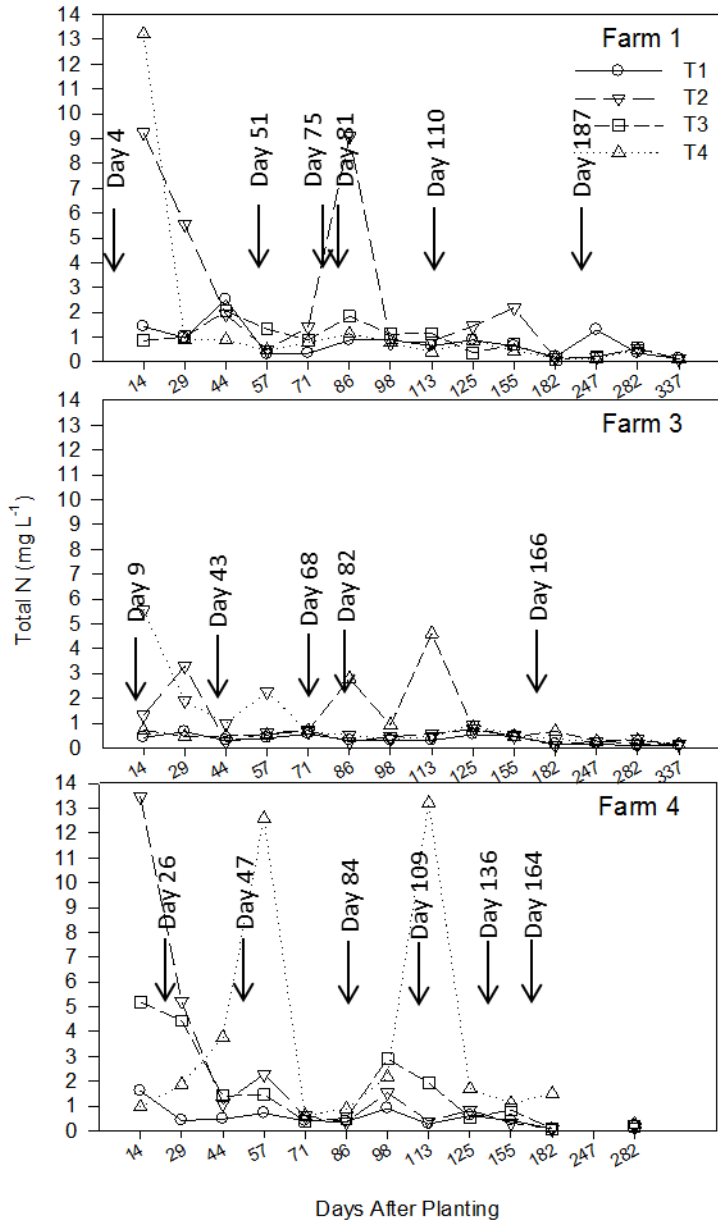
- $\text{NH}_4^+\text{-N}$ in the 0N and farmer practice plots similar. 0 N plots were not low in $\text{NH}_4^+\text{-N}$
- Monthly additions of urea did not change soil $\text{NH}_4^+\text{-N}$
- For FBM and CR fertilizers, $\text{NH}_4^+\text{-N}$ rose rapidly to a maximum at all sites within the 1st 60 days indicating a rapid release fertilizer.
- FBM and CR fertilizers conserve N in the root zone

Leaf N Concentration at 4 Months

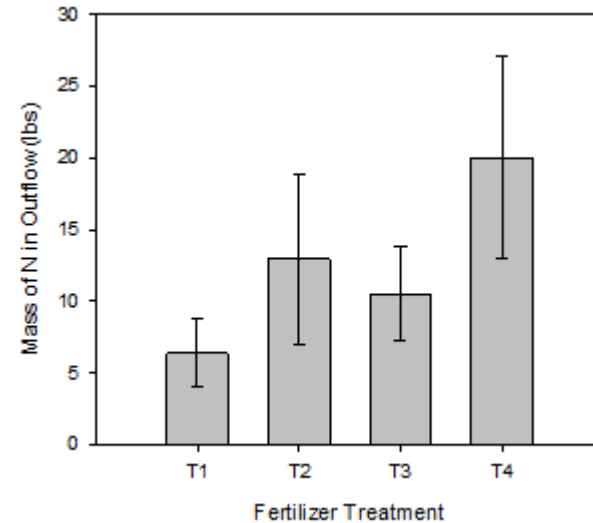


- Higher soil NH_4^+ -N in FBM and SRN plots at 4 months produced significantly higher taro leaf N status compared with ON and FP

Fertilizer Effect on Water N



- FBM and CR fertilizers showed effect on water N up to 30 days
- Urea practice showed increase related to fertilizer event mostly at Farm 4



- Urea treatment showed higher tendency for N export from the taro field.

Results of partial cost benefit analysis

Treatment	Farm	Yield	Gross Return	Net Return ^a	Mean Net Return
		lb/acre	\$/acre	\$/acre	\$/acre
Farmer Practice	1	16,607	\$11,127	\$10,626	\$14,320(±\$3,333)
	3	23,482	\$15,733	\$15,232	
	4	26,272	\$17,602	\$17,102	
FBM	1	22,461	\$15,049	\$13,249	\$11,571(±\$6,583)
	3	28,287	\$18,952	\$17,152	
	4	9,120	\$6,110	\$4,310	
CR	1	25,864	\$17,329	\$16,579	\$15,925(±\$567)
	3	24,434	\$16,371	\$15,621	
	4	24,366	\$16,325	\$15,575	

- Despite higher initial cost (68¢/lb for CR vs 48¢/lb for urea), CR produced more consistent return to the farmer.

Summary

- Potential benefits of Controlled Release Fertilizer
 - Control release fertilizer produced consistent yield with potential be economical to farmers
 - Conserves N in the root zone
 - Decreases export of N to river system
- Next Steps
 - should consider using lower rates of controlled release and fish/bone meal fertilizer
 - Repeat fish/bone meal experiment

Mahalo Nui!



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