Evaluating Invasive Algae species as Local Organic Sources of Potassium (K) in Hawaii

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Background

♦ The invasive algae is one of the greatest threats to Hawai'i's coral reefs.

♦ Major invasive species are *Eucheuma denticulatum, Kappaphycus alvarezii* and *Gracilaria salicornia*

![Marine algae images]

♦ Marine algae have beneficial effects when used in crop production (Zodape, 2001).

♦ Species of kelp, *Ecklonia maxima* has improved the growth of tomato seedlings when applied as a soil drench (Crouch *et al.*, 1992).

Source :http://www.nceas.ucsb.edu
Introduction

♦ Millions of pounds of the biomass of these species harvested every year and this has 14-20% Potassium.

♦ Hawaiian farmers need to increase local food production and start using more locally available inputs as it may help local growers to reduce their reliance on imported expensive fertilizers (Radovich et al., 2012).

Photo courtesy: DLNR/Division of Natural Resources (DLNR)
Objective

The overall objective of this research was to evaluate three invasive algae species on yield and K mineral nutrition of pak choi.
Materials & Methods

♦ 3 Greenhouse trials completed.

♦ **K Rates:** 75, 100, 150, 225 & 300 lb/ac.

♦ K from algae species were compared with commercial synthetic K source from KNO₃ & KCl fertilizers.

♦ Yield & tissue K data were analyzed and compared among fertilizer types.
Results

**Fresh wt(gms) among K rates**

- Rates of K from algae in kgs/ha
- Average fresh wt in grams

**Fresh Fertilizers**

- Averge fresh wt (gms plant-1)
- Control, Kappa, KNO3, KCL
Conclusions

♦ The invasive algae positively influenced growth & tissue K concentration of pak choi.

♦ The consistent results show that invasive algae have potential to be used as a replacement for synthetic K in crop production.

♦ Further studies are needed to confirm the generalizability of these results.
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Thanks and Mahalo for Listening!