



# **THE POTENTIAL FOR SEAWEED TO ENHANCE THE RURAL ECONOMY IN THE FALKLAND ISLANDS**

**Jim M<sup>c</sup>Adam  
U.K. Falkland Islands Trust  
and  
Queen's University of Belfast**

# THE FALKLAND ISLANDS

(Area: 1.2 million ha ; POP = 2.400)

∞ **Climate** : Maritime, Cool, Windy and Dry  
(Mean Summer 9°C ; Winter 2°C ; 600mm  
rain).

∞ **Soils** : Acid (pH 4-4.5); infertile peats low N  
and P status.

∞ **Vegetation** : Dwarf shrub heath and tussock  
-grassland.

∞ **Agriculture** : Extensive sheep farming for  
wool

# PROBLEMS

- ∩ Total reliance on one product.
- ∩ Low wool prices.
- ∩ Fragile rural economy infrastructure.
- ∩ Limited opportunities for diversification.
- ∩ Decline in rural population.

# POSSIBLE SOLUTIONS

- ⌚ Seek niche market products.
- ⌚ Diversify production.
- ⌚ Exploit “Clean green” image.
- ⌚ Organic status.
- ⌚ Move from sheep to cattle.

# **INCREASED OUTPUT OF “ORGANIC” QUALITY MEAT OR OTHER PRODUCTS WILL REQUIRE**

- ∞ Shelter.
- ∞ Improved, legume-based pasture.
- ∞ Fodder crops to fatten stock.

**THE KEY TO THESE WILL BE IMPROVED SOIL  
FERTILITY AND ANIMAL NUTRITION**

# SOIL FERTILITY

- ∞ No indigenous fertiliser sources
- ∞ Some deposits of Calcified seaweed
- ∞ Huge resources of kelp around the Islands - mainly *Macrocystis pyrifera*, but also *Lessonia flavicans*, *L. nigrescens* & *L. frutescens*.
- ∞ Estimated sustainable yield (Kelco, 1973) - 80.000 dry tonnes/year.

# SEAWEED QUALITY

**Analysis of Kelp (*Macrocystis pyrifera*) fronds collected in the Falkland Islands (Keppel Island), January 1987.**

<b>Element</b>	<b>Level</b>
Carbon (%)	62.1
Nitrogen (%)	1.79
C:N ratio	34.7
Potassium (%)	3.3
Phosphorous (%)	1.5
Magnesium (%)	0.4
Chlorine (%)	3.1
Calcium (%)	1.4
Cobalt ppm	<3.0
Copper ppm	7.9
Iodine ppm	1000

# USES OF SEAWEED

- ★ Manurial & water retention for tree establishment in shelterbelts.
- 🕒 As a fertiliser on improved grasslands.
- 🕒 As a supplement in animal feed rations.
- 🕒 Export for specialist uses e.g. alginates; cosmetics; health food.



# EFFECT ON GRASSLAND

## 1. LIQUEFIED KELP EXTRACT ON *Dactylis glomerata* GROWTH

Applied : November  
Assessed : January

Growth of cocksfoot tillers (12 weeks)  
mg/tiller/day

Assessment:	Control	7
	Nitrochalk	21
	Kelp extract	17

$p < 0.01$

## 2. KELP EXTRACT ON ESTABLISHED RESEED

The effect of kelp extract applied at 50 litres ha<sup>-1</sup> (1.2 kg N ha<sup>-1</sup> equivalent) and inorganic nitrogen applied as Nitrochalk at 60kg N ha<sup>-1</sup> equivalent on grass production between October and January.

	Control	Nitro - Chalk	Kelp	S.E.
Total Grass				
Yield				
(Kg DM ha <sup>-1</sup> )	1980	5531	2430	148
Stubble height				
following 2 weeks				
regrowth (cm)	2.7	3.4	5.1	0.28

# TUSSAC GRASS

## *(Poa flabellata)*

- ⌚ A potentially valuable native, coastal, tall tussock-forming grass.
- ⌚ High digestibility all year.
- ⌚ Provides shelter.
- ⌚ Good wildlife habitat.
- ⌚ Needs careful management - now a scarce resource.
- ⌚ Reintroduction programme planned.

### **3. EFFECT OF SEAWEED EXTRACT AND DRIED GROUND SEAWEED ON TUSSAC GRASS.**

- ☆ Establishment and early growth unaffected by dried or chopped, raw seaweed on two reasonably fertile sites. No response to any fertiliser.
- 🕒 On a poor site, in second growing year, plants grew taller ( $p < 0.05$ ) with seaweed extract than Nitrochalk.
- 🕒 Mean tiller number increased from 2 to 21 in year 2.

# SUMMARY

## Seaweed on Grassland

- ❧ Liquid seaweed extract has fertiliser value.
- ❧ Response on Grassland is more than to the N content of the material alone.
- ❧ Other major elements and hormones involved.
- ❧ Reseeds and Tussock grass will respond to seaweed though high quantities must be

# OTHER POTENTIAL USES

- ∞ To supplement concentrate diets for livestock feed - e.g. to produce “niche-market organic beef” - needs testing.
- ∞ Export air dried, ground product for further processing e.g. Alginates, Cosmetics, Health foods.
- ∞ Purity of environment around the Falklands (Oceanic, distance from population & pollution sources) can be a key marketing advantage.
- ∞ All of these could generate rural employment opportunities in an extremely depressed sector.

# SUMMARY - 1

- ∞ In the Falkland Islands, climate, soil and vegetation result in extensive sheep farming as the main land use.
  - ∞ Wool prices are poor and there is a need for diversification to create sustainable rural employment.
  - ∞ There is a huge potential seaweed harvest which could be used for:
    - grassland improvement.
    - cereal, growing
    - livestock nutrition
    - shelterbelt creation
- all of which will contribute to a diversified agriculture within a wholly organic concept.

# SUMMARY - 2

- o The potential to export semi-processed seaweed is high and there are several significant natural advantages.
- o The Falklands must develop niche markets for its products and expand and diversify its rural economy - seaweed can play a key role in this.



# FALKLAND ISLANDS NATURAL ADVANTAGES

- 🌀 Kelp will air dry to 20% moisture content.
- 🌀 Shallow, indented coastline.
- 🌀 No access or ownership problems.
- 🌀 Oceanic position with very low pollution levels - “pure” products.