

**THE UNITED KINGDOM
FALKLAND ISLANDS TRUST**

**ORGANIC HUSBANDRY GRASS
AND TREE PLANTING TRIALS**

(1983 to 1990)

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THE UNITED KINGDOM FALKLAND ISLANDS TRUST

Introduction

The Trust was established in 1981, before the Argentinian invasion of the Falkland Islands, to raise funds for a wide range of charitable purposes, not covered by Government support, for the benefit of the people of the Falkland Islands.

Initially, the Trust concentrated on educational needs, both training of young Falkland Islanders in the United Kingdom and the school in Stanley. However, with the aftermath of the invasion when British Government support became increasingly available, the Trust's specific interest turned to agriculture with the aim of improving the grass yield for the very large sheep population which provided the main source of income before the development of the fishing industry in Stanley. With the continuation of sheep farming as the main source of income of the Island's farm settlements, the need for this work to supplement some aspects of the research programme already funded by FIG, continues.

Improving the Agricultural Output by Biological Methods

As a result of discussions between the Chairman of the United Kingdom Falkland Islands Trust and the Managing Director of Organic Farmers & Growers Ltd in 1983 in Britain, it was decided to see whether a biological approach to farming in the Falkland Islands would improve the agricultural output. With the low temperature, rainfall and acid, infertile soils, there is a slow response to conventional inorganic fertilisers. Furthermore, all the fertilisers had to be imported at a cost which rendered their use uneconomic.

The problem with the soil is a top layer of fairly acid peat overlying a cold clay. However, the manurial effect of the droppings of large numbers of seabirds have greatly improved soil fertility. Grass growth is much earlier and better in the spring where the birds have been. In addition to the nutrients from the bird droppings, bacteria working gradually on the soil bring about natural improvement. The aim of the

Trust's project is to improve the biological activity of a wider range of soils and hence improve grass.

The Trust enlisted the co-operation of Dr Jim McAdam, an agronomist on the staff of the Department of Agriculture in Northern Ireland who had already worked on agricultural research in the Falkland Islands with the then ODA-funded agricultural research unit. He thus knew not only the soil conditions but also many of the farmers and research workers in the Island's, knowledge which has been invaluable to the project.

Soil Analysis

Starting in 1984, an initial soil analysis was carried out, not only for nitrogen, phosphate, potash and trace element levels, but also for aerobic and anaerobic bacteria counts and mycorrhizal fungi. It has to be understood that for good continuous production from any soil it is necessary to have a sufficient population of aerobic bacteria, fungi and other soil micro-organisms. Inorganic fertilisers on their own will not give lasting improvements in terms of long term soil activity and fertility. The analysis showed bacterial populations in general to be low, especially of nitrifying and nitrogen fixing bacteria. The message was, therefore, that the biological activity of the soil had to be increased considerably before lasting and significant improvements could be made.

Seaweed as an Organic Fertiliser

One natural resource of the Falkland Islands is the vast amount of seaweed found in the waters around the shores and piled on the beach by the tides and, while several attempts to export this seaweed have been made in the past, it does not seem to have been used on the land to any significant degree. Seaweed contains not only a vast range of major elements, trace-elements and vitamins, but also cytokinin growth hormones. These hormones enhance growth by increasing their root systems, thus providing a larger feeding area. Increased rooting and plant growth generally enhances plant turnover and microbe activity. This extra bacterial activity supplies more plant food. To have this effect seaweed is best used in a processed form where it is broken down. As no plant is available to process seaweed into a liquid form,

for the first trials seaweed extract was sent out to the Falkland Islands with some other materials for comparison. The results of the initial trials showed increases worth noting where sufficient quantities of the liquid seaweed had been used. At present more extensive trials are underway to confirm this better growth on a larger scale. The dose rate had to be ten times that used in the UK to achieve a similar response. This is obviously a reflection of the adverse climate and poor soils for plant growth in the Falklands compared to UK. The average stocking rate in the Falklands is about five acres per sheep whereas on upland farms in the UK it tends to be nearer one ewe per acre.

Hence, the seaweed trials are now progressing to demonstration areas which are on a larger scale. However, whilst there is some potential to use seaweed as fertiliser, shelter is needed from the strong winds and frequent gales to make full use of the improvement.

Tree Planting

Trees, with the odd exception, do not exist in any quantity on the islands. Although efforts have been made in the past to grow trees, they have been without much success due to various causes. One of these causes could be the inhospitable soil conditions into which they have been planted. Trials are now to proceed to test a range of planting techniques on different sites using different species of trees. Seaweed compost will also be tested as a planting medium. It is felt that if only the tree roots can be encouraged to get down into the clay, then they will not only be able to extract the food from the clay but they will also anchor themselves better.

If the tree planting is successful, and a technique for tree planting is developed and shelterbelts established, then micro-climates will be produced in which soil-life will proliferate. Earthworms can then be introduced and a full compliment of soil micro-organisms will gradually be achieved. In turn, good top soil will follow and sheep will be able to graze better quality grass. The resulting increase in stocking rate will be beneficial and increased cycling of dung will result in natural cycles of nutrients operating at faster rates.

As processing of seaweed can be very expensive it has been decided to use bacteria to do the work. A "digester" is being tried; where a large tank into which seaweed is placed to be broken down into a solid, a liquid and methane gas. Other waste can be put into the digester. While the solid is compost for tree planting, the liquid will be applied to the pasture and the methane can be used for heating or other purposes. If the digester is successful, small similar plants can be established at farm settlements. Initial trials with the digester are proving most encouraging.

This is an outline of the UK Falkland Islands Trust Organic Husbandry Project. However, if it results in farmers recognising that a cheaper form of fertiliser can be produced locally and will stimulate some processing initiative then the hard work put in and the money spent will be very worthwhile. The project is of a long term nature as improvement will always be slow in the adverse soil and climatic conditions of the Falklands and the enhancement of natural cycles takes time.

Cooperation in the Falkland Islands

Within the ever-increasing number of farmers agreeing to site trials on their land in the Falklands, the existing spread of the trial activity is as follows:-

Keppel Island

Sealion Island

Port Howard

Market Garden, Stanley

Bold Cove, West Falkland

Beckside Farm

The co-operation of and assistance with the programme by
The Agricultural Research Centre at Stanley and Fox Bay
is gratefully acknowledged.

(A map of the locations is attached).

Funding the Trials

The Trust has an average annual income of £6,000 to £7,000 for its various projects. With a long term future, it would be imprudent to run down an average capital fund of some £65,000. The greater part of this income is put to the agricultural project in which £22,700 has been spent over six years with satisfactory research results of internal and external value.

The need to start a complimentary tree growth project to investigate tree planting techniques has been possible by a grant of approximately £6,500 annually for three years by the Falkland Islands Development Corporation.

Grass Trials Programme 1990/91

The work planned covers:-

- continuing development of the trials on existing sites.
- introducing new sites.
- visiting sites and monitoring results of ongoing, long-term trials.
- operating a trial seaweed fertiliser digester.
- use of a liquid fertiliser sprayer to apply products from the digester.
- information programme for farmers covering the grass research and development.

The estimated cost of this programme, already started is £8,000 of which the Trust has earmarked £4,000.

Technical Reports

The following technical reports have been written during the Trial Period:-

- Soil Fertility and Biological Husbandry in the Falklands - Preliminary report (January 1984).
- Soil Fertility in the Falkland Islands - Part 2 - Soil chemical analyses 1984.
- Soil Fertility in the Falkland Islands - Part 3 - Soil microbiology analysis (May 1985).
- UKFIT Farming project - Part 4 - The establishment of field trials to evaluate the role of seaweed ... (November 1985).
- UKFIT Farming project - Part 5 - The effect of a range of organic and inorganic fertilisers on reseed establishment (August 1986).
- Preliminary report on a visit to the Falkland Islands 86/87 (February 1987).
- Falkland Islands Organic Husbandry Trials - Confidential discussion paper under 21 headings (May 1987).
- Report on a visit to the Falkland Islands in January 1988 and the future proposals for the biological husbandry project. (March 1988).
- The potential for biological husbandry in the Falkland Islands (1988).
- Seaweed in the Falkland Islands and its potential role in agriculture (1988).
- Report on a visit to the Falkland Islands, February 1989.

Copies of the reports in Natural Farming /Spring 1989, "Seaweed in the Falkland Islands and its potential in agriculture" by J H McAdam, "Organic Farmers and Growers ... the story so far" by David Stickland from Modern Organic Farming and Horticulture /Spring 1988 are enclosed.

Report on my visit to the Falkland Islands for the United Kingdom Falkland Islands Trust 8 - 17th January 1990 (D. Stickland).

Nigel N St G Gribbon
Chairman

Fig. 1. The Falkland Islands, illustrating the location of the sites referred to in the text and detailed in Appendix

