



Western SARE

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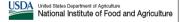
Professional Development Program

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CONVERTING LAND TO AG USE

Situation

Pursuing agriculture in Alaska often requires clearing birch and spruce stands. The slash is typically windrowed into swathes 50 to 75 feet wide for later burning. This causes several problems:

- The process removes considerable soil and sustaining organic matter
- Windrows burn poorly, even after years of seasoning, because of size, moisture and topsoil
- The windrows occupy 15-20% of the cleared space

Using rotted wood and bark mulch from existing windowed slash piles could pro-

Farmer/Rancher Grant

Title: Establish More Efficient and Biological Practices for Bringing Forest Land into Agricultural Use through Sustainable Development Using Indigenous Species in Alaska

Project Number: FW96-082

Principal Investigator:

Vickie Talbot Former Owner Moose Creek Farm Trapper Creek, Alaska Current address: 11675 E Soapstone Rd. Palmer, AK 99645

Technical Advisor:

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SARE Grant: \$5,000



Lingonberries are often collected in the wild and used in jams, jellies and candies.

vide a basis for sustainable crops of lingonberries and other native berries. This could reclaim a valuable resource and alleviate the costs of conforming soils to non-indigenous crops.

Objectives

- Reclaim valuable timber resources created from clearing forest land for agricultural use
- Establish a commercial lingonberry stand and other native and indigenous berries using rotted birch and spruce mulch as soil conditioners

Actions

Site Description

The project site had been cleared of brush and trees as part of the 1982 Land Disposal-Matanuska Susitna Borough Agriculture Sale, designed to bring more land into agriculture. An owner was required to place 75% of land in production within nine years to retain ownership.

This 67-acre operation,

Moose Creek Farm at the northern end of the Matanuska Valley, included 45 acres in fields, 12 acres in woodland and the rest in wetland and windrowed slash.

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Above, slash was chipped and, blelow, beds prepared.





SARE's mission is to advance—to the whole of American agriculture—innovations that improve profitability, stewardship, and quality of life by investing in groundbreaking research and education.

The Western Region, one of four SARE regions nationwide, is administered through Utah State University.

Western SARE: http://wsare.usu.edu

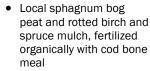
National SARE www.sare.org

CONVERTING LAND TO AG USE

Activities

A chipper capable of shredding trees up to 10 inches in diameter prepared mulch for applications.

Beds were prepared on 1 acre for 12,000 plugs of lingonberries and new starts of currants, high brush cranberries and wild rose. Soil applications at various stages of the project included:



- Chipped rotted wood from slash rows disked in at rates of 0, 2, 4 and 6 inches per quarter acre
- 5 tons of raw fish waste
- Diluted animal blood (5 gallons blood to 300 gallons of water)

Soil samples were taken for nitrogen, phosphorus and potassium before and after applications.

Results

Pre-application soil tests found very low levels of nitrogen and phosphorus and high levels of potassium.

The applications of blood and fish emulsion were very effective in raising the nitrogen levels required by lingonberries.

Wood chips were effective in conserving moisture, which reduced irrigation needs, and suppressing weeds and wild grasses, except for horsetail fern (Equisetum arvense).

Lingonberry plants in plots with wood chips had a higher rate of rhizome growth, which will increase plant productivity more quickly as the soil continues to improve and become more balanced from decomposing fish and chips.

The project had variable success in starting other new





At left, new beds of lingonberries with drip irrigation. At right, lingonberries are harvested from the Moose Creek Farm beds.

crops:

- Highbush cranberries (Viburnum edule) failed to start from cuttings
- It was later discovered that highbush cranberries could be propagated by layering
- Currant starts (Ribes triste) were successful but not sufficiently developed to plant in the field
- Wild roses (Rosa acicularis) were successfully started on 2 acres
- Fireweed (Epilobium angustifolium) for honey production was developed on 2 acres



Three-year-old lingonberries with horsetail fern pulled back.

Benefits or Impacts on Agriculture

The wood chips and fish waste yielded a considerable increase in beneficial soil organisms, including earthworms (a tenfold increase in plots with chips) and beneficial insects (beetles and spiders). The fish waste caused a flush of microbial organisms that will add nitrogen as they

die and decompose.

The soils became more sustainable by providing the necessary building blocks for the organisms that build soils, more closely resembling soils on which lingonberries thrive in the forest.

As the project evolved, an objective was added based on evidence that horsetail fern played a role as a potential companion crop in lingonberry production. The findings, though preliminary, suggest several benefits and problems:

- Lingonberries without horsetail fern did not grow better than those with horsetail fern
- Heavy concentrations of horsetail fern restricted growth of young lingonberries; moderate concentrations did not
- Rows with horsetail fern decreased the ability of undesirable species to germinate
- Horsetail fern created a buffer against harsh weather
- Lingonberry leaf color was brighter where horsetail fern was growing suggesting shade may be desirable during the early stages of lingonberry plant development
- Horsetail fern hampered harvest