A 2000 Western SARE Farmer/Rancher Grant (FW00-050, Propagation of Alaska Native Plants for Restoration and Landscape Use) conducted by Mike Emers provided important results for addressing propagation challenges and developing a protocol for germination and container production. Based on one year’s results showing varying survival and growth rates on different areas of Rosie Creek Farm, it was observed that they would grow better with:

- Better drainage than the current soil (almost pure glacial silt)
- Use of a low N fertilizer to reduce weed competition and insect outbreaks

This project proposed to test the new protocols under such drainage and fertility conditions.

### Objectives:

- Assess methods to improve field survival
- Evaluate cost-effectiveness of varying soil pH and amendments
- Determine seed production rates per plant and per unit area
- Assess insect infestations
- Evaluate extent of weeds and weed control methods
- Determine costs of small-scale production and develop cost estimates for larger-scale production

### Actions:

In 2000, 400 seedlings each of these species were grown in containers and overwintered:

- *Hedyasarum mackenzii*
- *Astragalus alpinus*
- *Hedyasarum alpinum*
- *Oxytropis deflusa*
- *Oxytropis campestris*
- *Oxytropis viscid*

In spring 2001, beds 3 feet wide and 100 feet long, two rows per bed and 12 inches between plants, were set and fertilized with fishbone meal at 1,000 per plant. In the 7,000 acres of gravel roads and pads on North Slope oil fields that must be reclaimed after decommissioning could generate $2-5.5 million in seed farm cost per pound (7.15 lbs/plant). Starting dry, the pots were planted in late spring with fishmeal and slowly watered until overwintered. Effective growth and survival were obtained overwintering these species. While some species suffered from disease, insects or weed competition, some produced seed:

- *Oxytropis deflusa* – 200 grams
- *Oxytropis viscid* – 20 grams
- *Oxytropis campestris* – 22 grams

### Results:

Early results were encouraging:

- *Oxytropis deflusa* and *Astragalus alpinus* greened up quickly and were soon in flower.
- *Oxytropis campestris*, *O. mackenzii* and *O. viscid* greened up slower but still flowered.
- *Hedyasarum alpinum* did not survive well after planting in 2001, and those that did survive the winter grew slowly if at all.

Although some plants grew fast, they were still relatively small after two growing seasons (2-5 cm tall) and weed competition soon became an important factor. Weeding required 30 person hours per week on the ¼-acre plot.

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- *Oxytropis campestris* – 22 grams

### Impacts or Benefits on Agriculture:

The experiment was begun under the assumption that, because these are native species, they would require less care to grow. That was far from the case as most of the plants grew slowly, produced little seed and required excessive labor to fight weeds. However, despite problems encountered, the results on seed collected, particularly *Oxytropis deflusa* at a rate of 31 pounds per acre, were encouraging. Because this was a pioneering effort, the costs of production were exaggerated, and in a production setting where the plants would be another crop in a farm plan, the cost would likely be lower.

Growing these plants could be profitable, given the right grower and situation. Thoughts for consideration:

- Start with a sandy or gravelly soil
- Plant directly through a weed barrier fabric
- Grow the plants in containers, then plant directly into their intended setting

### Table 1. Results from seed collections from 3 Oxytropis Species

<table>
<thead>
<tr>
<th>Species</th>
<th>O. deflusa</th>
<th>O. campestris</th>
<th>O. viscid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants*</td>
<td>667</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Seed per plant</td>
<td>1094</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Yield (g)</td>
<td>2.17</td>
<td>0.65</td>
<td>0.07</td>
</tr>
<tr>
<td>Seed per acre</td>
<td>0.015</td>
<td>0.0098</td>
<td>0.0079</td>
</tr>
<tr>
<td>Seed cost/kg</td>
<td>0.004</td>
<td>0.0033</td>
<td>0.0029</td>
</tr>
</tbody>
</table>