Arnica chamissonis Less. ssp. foliosa (Nutt.) Maguire meadow arnica Family: Asteraceae



Figure 82. Documented range of Arnica chamissonis in northern British Columbia.



Figure 83. Growth habit of Arnica chamissonis in cultivation.

Arnica chamissonis ssp. foliosa (continued)

meadow arnica

Background Information

Arnica chamissonis is found north to Alaska and the Yukon Territories, east to Ontario and south to New Mexico, Arizona and California. It is commonly found in B.C. (Douglas et al. 1998). MacKinnon et al. (1992) report that it is found scattered throughout northern British Columbia, but that it is locally abundant where it is found. Three subspecies are recognized in B.C.; the accessions with which we have been working are all *A.c.* ssp. *foliosa* (Nutt.) Maguire (Douglas et al. 1998). As occurrences and collections are often not identified to subspecies, subspecies are not distinguished in the range map presented in Figure 82.

<u>Growth Form</u>: Rhizomatous perennial herb; 5-10 pairs of opposite stem leaves; yellow ray and disc flowers; mature plant size is 20-100 cm tall, one of the tallest *Arnicas*. Spreads easily from rhizomes, but can be propagated from seed as well (Douglas 1982, MacKinnon et al. 1992, Douglas et al. 1998).

<u>Site Preferences</u>: Wet to mesic meadows and forest openings, found throughout northern B.C. at low to moderate elevations (MacKinnon et al. 1992, Douglas et al. 1998).

Seed Information

To 50% potential: 39.9 days. <u>Seed Longevity</u>: Unknown at present, however Kramer and Johnson (1987) report that seeds of *Arnica* sp. have been found in mature forest seed banks. Link (1993) reports that



Figure 84. Seeds of *Arnica chamissonis*. Rule divisions are 0.5 mm.

seeds of *Arnica sororia* Greene are viable for about five years. In our research, seeds of *Arnica chamissonis* retained their viability after storage under cool dry conditions for two years.

Considerations for Growing

Techniques for Seed Production

Seed treatment: Germination tests suggest marginal benefits to stratification; establishment likely better in cool soils (early or late in the growing season).

Soil considerations: Establish on loamy, well-drained rich humus, (pH 7), with a firm seedbed (Richters 2000).

Arnica chamissonis ssp. foliosa (continued)

(Techniques for Seed Production, continued)

Stand establishment: Site should be free of all weeds, especially rhizomatous grasses because there are currently no selective herbicides that can be used once plants are growing. In our research, stand establishment from seed is very successful; also establishes well from peat moss plugs sown 12 weeks prior to field planting.

Row spacing (for both plugs and seeds): 60 to 120 cm under dry land conditions, 30 to 90 cm with good irrigation (Smith and Smith 2000); this species will spread vegetatively to quickly form rows several plants wide, hence the recommendation for wide spacing.

Seeding density: 60-100 PLS seeds per linear metre.

Seeding depth: Surface to shallow seeding (Smith and Smith 2000), a light dusting of peat moss will help to keep the seeds in place.

Stand maintenance: Regularly cultivate rows and spot spray with herbicide to keep plot weed free; annual fertilization with low N formulations may extend the life of the plot; stand longevity is 3-5 years. *Arnica chamissonis* is very easy to grow, as its rhizomes quickly fill in the spaces between plants. Vigorous shoot growth results in lodging, however, so high levels of N should probably not be applied.

Harvesting and Seed Processing

Dates of selective harvesting in the Bulkley Valley of northwestern B.C. have ranged from July 7th to October 6th. Watch the plants carefully and harvest seeds as soon as they are ripe. *Arnica chamissonis* seeds are not as prone to dislodging by wind as those of *A. cordifolia*.

Hand clipping: May or may not be suitable, as it is not yet known whether curing will facilitate after-ripening of remaining seeds. Hold the seed heads over bins placed alongside the plants being clipped or place a bag over the seed heads before clipping to minimize seed loss.

Vacuum: Vacuum ripe seed heads selectively as they ripen by placing vacuum intake completely over seed head.

Seed stripper: Not recommended for harvesting this species.

Combine/Thresher settings: Repeated runs at 1241 rpm with 4 mm gap; remove fluff between runs by hand or vacuum.

Seed cleaning: After threshing, remove remaining fluff with shop vacuum; if there are stems and twigs present put through fanning mill screens, fanning mill screen sizes: prescreen $1.2 \times 7.1 \text{ mm}$ slot; top $1.8 \times 12.7 \text{ mm}$ slot; bottom blank.

Storage requirements: Cool dry storage (Burton and Burton 2001b).

Considerations for Use in Revegetation

- In Alberta, Arnica chamissonis is reported to grow on wet to mesic soils (Gerling et al. 1996).
- The ability of *Arnica chamissonis* to spread rapidly through rhizomes makes it very useful for erosion control.

Other considerations

• *Arnica chamissonis* has potential as a garden species, though aggressive spreading needs to be contained. It is already commercially available from some specialized seed houses and nurseries.

Arnica chamissonis ssp. foliosa (continued)

(Other considerations, continued)

• Both wild and cultivated *Arnica* species are used in as many as 300 drug preparations in Europe and about 20 products in Canada (Small and Catling 2000). The medicinal and pharmaceutical properties of *Arnica chamissonis* remain to be fully explored.

Notes