

Composites

Achillea millefolium L.
common yarrow

Family: Asteraceae



Figure 75. Documented range of *Achillea millefolium* in northern British Columbia.



Figure 76. Growth habit of *Achillea millefolium* in cultivation.



Figure 77. Mature *Achillea millefolium* plant.



Figure 78. Close-up of *Achillea millefolium* flowers.

***Achillea millefolium* L.**
(continued)

common yarrow

Background Information

Though circumpolar and a common component of European meadows and hayfields, research suggests that most of the yarrow found in Canada is native to North America (Frankton and Mulligan 1970). Most populations in the northern interior of British Columbia are probably *A.m.* var. *lanulosa* (Nutt.) Piper in Piper & Beattie, but may also include the shorter *A.m.* var. *alpicola* (Rydb.) Garrett (Douglas et al. 1998) at higher elevations; we did not distinguish among varieties in acquiring our accessions. Several varieties of this species, primarily of European origin, have been developed for distinctive flower colours and are marketed as ornamentals; others are grown in cultivation for medicinal purposes. A series of classic studies in population genetics conducted in the 1940's and 1950's identified strong ecotypic variation along elevational gradients (Hiesey and Nobs 1970). Flowers rarely self-pollinate, probably because anthers (male) appear before receptive stigmas (female) in individual flowers, and are largely insect pollinated (Pojar 1974). See Warwick and Black (1982) for a thorough overview of the biology of *Achillea millefolium*.

Growth Form: Aromatic rhizomatous perennial herb. Vegetative growth starts with a dense rosette of fern-like leaves typically less than 10–15 cm tall. Flowering stalk to 60 cm tall has spaced, alternate fern-like leaves and terminal clusters of 5 white to pink ray flowers and 10-40 cream coloured disk flowers (Douglas et al. 1998, MacKinnon et al. 1992).

Site Preferences: Various reported to grow most abundantly on dry to moist, or mesic to dry well-drained open sites, at low to high elevations; does well on disturbed sites and poor soils but is intolerant of shade (MacKinnon et al. 1992, Small and Catling 1998, Douglas et al. 1998). Widely distributed in the SBPS (SMR <7), found on dry rich sites in the SBS (SMR<5, SNR>A), though restricted to sites of SMR<3 and SNR B-C in moist SBS subzones. Found on circum-mesic sites in the ESSF (SMR 2-5, SNR B-D), though more restricted in the wetter subzones; restricted in the BWBS to moister sites (SMR>5) and subzones (Beaudry et al. 1999).

Seed Information

Seed Size: Length: 2.15 mm (1.82 - 2.48 mm)
Width: 0.78 mm (0.61 - 0.94 mm)
Thickness: 0.30 mm (0.22 - 0.35 mm)

Seeds per gram: 8,105 (range: 6,073 - 9,417)

Volume to Weight Conversion: 132.5 g/L at 40.6% purity
205.3 g/L at 72.5% purity

Germination Capacity: At 30°/20° C untreated: 81.4% (65 - 98%)
At 25°/15° C untreated: 91.5% (86 - 96%)
stratified: 90.5% (86 - 95%)

Germination Speed: To first germination: 5.0 days
To 50% potential: 6.0 days

Seed Longevity: at least 5 years under cool dry conditions.



Figure 78. Seeds of *Achillea millefolium*.
Rule divisions are 1.0 mm.

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(continued)**

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Considerations for Growing

Techniques for Seed Production

Soil considerations: Establish on loamy, well prepared soils, with a firm seedbed. Germination tests suggest that *Achillea* will germinate best on cooler soils (early or late in the growing season).

Stand establishment: Site should be free of all weeds, especially rhizomatous grasses and other persistent species because there are currently no selective herbicides that can be used once plants are growing. Stands can be established from excised rhizomes (Bourdôt 1984, Rose et al. 1998), from seedlings started in the greenhouse, or from seed sown in spring or fall. Germination from seed is excellent; the bottom photo on the front cover of this manual shows an *Achillea millefolium* seed production plot established from seed using a single-row push seeder.

Row spacing: 60-90 cm.

Seeding density: 375 PLS seed per linear metre of row.

Seeding depth: Surface (Pahl et al. 1999), or no more than 6 mm deep (Pyke and Borman 1993). A light dusting of peat moss or dry soil will help keep the seeds in place.

Stand maintenance: Regularly cultivate rows and spot spray with herbicide to keep plot weed free; our plots were productive for only two years after establishment without fertilizer inputs, though plants did regenerate vegetatively and filled in the plot. Assuming good soil quality, Pahl and Smreciu (1999) estimate the stand life to be approximately 4 years. Annual applications of a low-nitrogen fertilizer may help extend stand life. Plastic placed between rows will not only serve as mulch but will catch easily shattered seeds which can later be vacuumed or swept up.

Harvesting and Seed Processing

Dates of selective harvesting in the Bulkley Valley of northwestern B.C. have ranged from July 25th to November 1st (starting from July 25th to August 19th). Some seeds are retained in seed heads until late fall if protected from wind.

Hand clipping: Hold the seed heads over bins placed alongside the plants being clipped, or place a bag over the seed heads and bend them over before clipping to minimize seed loss.

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

Seed stripper: Seed sheds and scatters moderately easily, so seed stripping should be done with a fine brush stripper and a vacuum attachment, if possible.

Combine/thresher settings: 885 rpm with 6 mm gap.

Seed cleaning: Fanning mill (no air flow), followed by vacuum separator. Fanning mill screen sizes: prescreen 1.8 x 12.5 mm slot; top screen 1.2 x 7.1 mm slot; bottom screen blank or 1.40 mm square. Then use vacuum separator with speed and suction set low to remove dust and <5% of seeds. Hand sieve using a #14 (1.40 mm) screen for small quantities or for finishing.

Seed storage: Cool dry conditions (0.6°–7.2° C; Link 1993).

Considerations for Use in Revegetation

- *Achillea millefolium* makes a valuable contribution to many seed mixtures, being added where a fast-germinating, low-growing, rhizomatous non-graminoid species is desired.
- *Achillea* can effectively control erosion, due to good ground cover by basal leaves and its extensive system of rhizomes (Shaw and Monsen 1983).

***Achillea millefolium* L.**
(continued)

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(Considerations for Use in Revegetation, continued)

- Drill seed 6 mm deep or broadcast seed, then cover with a similar depth of soil at a rate of 431 to 646 PLS per m² under ideal moist conditions; double the rate when broadcast seeding and for harsh, erosive and south- or west-facing or dry sites (Pyke and Borman 1993).
- Yarrow is moderately resistant to grazing, due to its aromatic nature and/or bitter taste, so can act as a deterrent to wildlife and cattle; it has poor to fair forage value (Alekssoff 1999, Gerling et al. 1996, Small and Catling 1998). As a result, this species is generally an "increaser" under heavy grazing pressure, and its rhizomatous growth form also allows it to recover and increase after light fire (Alekssoff 1999). We note, however, that deer will eat flower heads.
- Rapid germination and good establishment on degraded soil means this species can provide quick ground cover and is very useful for erosion control (Small and Catling 1998).
- Common yarrow withstands mowing, so has great potential for lawn cover or roadside revegetation (Connelly 1991, Small and Catling 1998).
- *Achillea* is reported to grow on medium to coarse textured wet to dry soils in Alberta and to be tolerant of drought and acidic soils (Gerling et al. 1996). It has also been observed as an invader of coal minespoils in Alberta and the U.S.A. (Russell 1985, Uresk and Yamamoto 1986).
- Vigorous early growth in new habitats slows down as a plant community establishes around *Achillea*, so this plant is rarely aggressive despite its rhizomatous habit. This species is moderately competition-tolerant (Goldberg 1987, *Higgins and Mack 1987, Gurevitch et al. 1990) so long as it remains unshaded by trees and shrubs, and can persist in mature grassland communities.

* *fide* Alekssoff 1999.

Other Considerations:

- *Achillea millefolium* has been widely used medicinally in North America and Europe for millennia (Shemluck 1982, Small and Catling 2000).
- Extracts from yarrow foliage are currently present in more than 20 pharmaceutical products marketed in Canada (Small and Catling 1998, 2000).
- Proven mosquito repellent (Tunon et al. 1994).
- Has still untapped potential as an ornamental, food and medicinal crop (Chandler et al. 1982, Small and Catling 1998, 2000, Marles et al. 2000).
- Has potential for use as a residential lawn cover, as it can withstand trampling, mowing and infrequent watering (Connelly 1991).

Notes:
