

PRELIMINARY WORK WITH MEDICINAL HERBS

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Introduction

Reports show that the medicinal market in the United States is estimated at three billion dollars each year (Sturdivant and Blakley, 1999). The objective of this study was to collect information pertaining to production and quality based on environmental influences of several medicinal herbs by growing them at various locations. The following herbs were established at the Madras site in 1999: valerian (*Valeriana officinalis*), catnip (*Nepeta cateria*), calendula (*Calendula officinalis*),

- angelica (*Angelica archangelica*), Echinacea (*Echinacea angustifolia*), burdock (*Actium lappa*), and astragalus (*Astragalus membranceus*).

Materials and Methods

All herbs were grown during the spring under growth lamps and fertilized weekly using 15-30-15. A week to 10 days before transplanting, plants were moved outside during the day to begin hardening. Angelica and calendula were transplanted on May 17, and catnip, valerian, and echinacea were transplanted on May 24. Immediately after transplanting, plants were covered by a protective cone to provide shade during the first two days. Burdock and astragalus were direct seeded and mulched. The herbs grown at Madras were arranged in 6 row plots with 3-foot row spacing and 30 inch rows. Each of the center four rows then were divided into two 3.05-m (10 foot) plots and assigned a sulfur treatment (40 lbs S per acre) and a control. Calendula flowers were harvested from the entire 3.05-m plot each week after June 29, when flowers first began to appear. Flower heads were harvested in the morning, allowed to air dry, oven dried, and weighed. Entire catnip plants were harvested on July 27 from the 3.05-m plots, air dried, and weighed. Two plants per plot of valerian and echinacea were topped, and roots were dug on November 15. Roots were washed to remove soil, air dried and weighed. All dry plant samples were shipped to the University of Saskatchewan for analysis of active ingredient. Analytical results for the 1999 crop are still in progress. Samples were also taken from a 3-year old plot of *Echinacea purpurea* at the Powell Butte COARC station. A 2 m² area was harvested about 1 foot from the ground, (about one third of the plant height) and air dried. Roots also were recovered, washed, and air-dried.

Results

All transplants except the *Echinacea angustifolia* survived and began to immediately put on top growth. Echinacea plants remained small but eventually began to flower on October 15. The burdock and astragalus had very poor germination, under 10 percent, and reseeded resulted in the same outcome. Saskatchewan reported poor germination of those species as well. Sulfur treatments did not show any differences in yield but may have an effect on active ingredients. Calendula flowers were healthy and produced, on the average, 200 flowers per plot each week.

Collection of calendula lasted for 15 weeks. Blister beetles damaged flower petals for two weeks. We applied a nicotine spray to the whole plots and diazinon to the border areas after flower harvest. Valerian, angelica, catnip, and calendula produced abundant foliage and began regrowth after harvest. Plants will be evaluated next year for production and active ingredients.

Table 1. Yield of medicinal plants grown at COARC facilities in 1999. All values except calendula are air-dry samples. Calendula flowers were oven-dried after air drying. The *Echinacea purpurea* crop was in the 3rd year of production at Powell Butte. All other medicinals were in the 1st year of production at Madras.

Herb	Dry Weight (lb/a)
Calendula	108
Catnip	2,700
<i>Echinacea angustifolia</i> root	284
<i>Echinacea purpurea</i> root	3,208
<i>Echinacea purpurea</i> foliage	9,684
Valerian root	11,473

Literature Cited

Sturdivant, L. and T. Blakley. 1999. The bootstrap guide to medicinal herbs in the garden, field, and marketplace. San Juan Naturals, Friday Harbor, WA..