PRELIMINARY WORK WITH MEDICINAL HERBS

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Introduction

Sales of medicinal herbs in the USA are reported to have doubled from 1997 to 1998, and it is anticipated the market will keep expanding (Landes, 1998). The purpose of this trial was to investigate environmental influences on the potency of several medicinal herbs by growing them at several location. This interest overlapped with an interest to see how some of these herbs might perform in central Oregon. Accordingly the following herbs were established at the Madras site in 1997: valerian *(Valeriana officinalis),* feverfew *(Tanacetum parthenium),* clary sage *(Salvia sclarea),* and catnip *(Nepeta cataria).* In addition a plot of *Echinacea purpurea* was established at the Powell Butte site.

Methods

The herbs grown at Madras (valerian, feverfew, clary sage, and catnip) were laid out in 6 row plots with a row spacing of 1.2 m (4') and each row being 7.6 m (25') long. For each herb, about 3.05 m (10') from the middle of the middle four rows were harvested (so all samples were bordered. Feverfew was harvest 22 June. Catnip and clary sage were harvested 14 August. Valerian was topped 31 July and roots were dug from part of the plot (3.5 m^2) on 4 August, and again (7.5 m^2) on 22 October. All samples were air dried in cloth bags. An area of 7.81 m^2 was harvested from the *Echinacea purpurea* plot on 2 October. The plants were cut about 0.3 m (1') from the ground -- about one-third of the plant height. Analysis of samples taken the previous year was conducted by Dr. Barl of the University of Saskatchewan as reported in Tanino and Barl (1998).

Results

The plants survived the winter well and put on a fair amount of top growth (Table 1). Samples were not analyzed this year for active ingredient, but we recently obtained the analysis of samples taken the previous year (1997). Feverfew from Madras was reported to contain 0.29 percent parthenolide. Valerian contained 0.117 percent valerenic acid and 0.36 percent essential oil on a dry weight basis. Components of the valerian essential oil were: 9.95 percent bornyl acetate; 1.88percent caryophyllene; 0.75 percent spathulenol; 0.17 percent camphene; 1.18 percent agarospirol; 0.60 percent caryophyllene oxide; 0.39 percent borneol (note that analytical results were quite variable). Analysis of flavonol glucosides from Calendula sampled in 1997 had 0.413 percent isorhamnetin-3-rutinoside and 0.036 percent isorhamnetin-3-glucoside. Essential oil from calendula flowers contained: 50.6 percent cadinol; 26.0 percent cadinene; 2.23 percent ledol; 2.62 percent hexafarnesyl acetone; 0.40 percent copaene; and 0.24 percent caryophyllene. Milk thistle

seed extract (ether followed by methanol) contained the following oils: fixed oil 24.5 percent; silibinin A 0.393 percent; silibinin B 0.546 percent; DH-silibinin 0.249 percent; silychristine 0.63 percent; silydianine 0.482 percent; taxifolin 0.364 percent; and silymarin 2.66 percent. Tanino and Barl (1998) report that valerian and catnip had greater amounts of active ingredient when grown in Saskatchewan than in Madras. Feverfew grown in Madras compares favorably with other sites in terms of dry matter produced and percent active ingredient.

Table 1. Yield of medicinal plants grown at COARC facilities in 1998. All values are for air-dry samples (none were oven-dried).

Herb	Air-dry Weight (lbs/acre)
Echinacea purpurea	5870
Feverfew	6310
Clary Sage	7170
Catnip	5760
Valerian Root (Aug. 4)	1790
Valerian Root (Oct. 22)	607

Literature Cited

Landes, P. 1998. Market report. Herbalgram 43: 60-61.

Tanino, K., and B. Barl. 1998. Final Report: Northern vigor potential in medicinal and aromatic plants. Department of Plant Sciences, Univ. of Saskatchewan, Saskatoon.