

## FORAGE RESEARCH AND EXTENSION IN CENTRAL OREGON

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### Abstract

**Completed and present research projects include an annual legume adaptation trial, spring and winter forage cereal variety trial, long term weed control effects on alfalfa production, seedling alfalfa herbicide trials, dormant alfalfa herbicide trial, New Zealand forage species trial, annual legume residual nitrogen effect on Kanota oat hay, and improving nitrogen fertilizer recommendations for hay and pasture to reduce potential ground and surface water non-point pollution in central Oregon. New projects to begin in 1994 will include a forage/eco-zone calendar trial, dormant alfalfa herbicide trial in Fort Rock/Christmas Valley, pasture renovation trial and an alfalfa variety trial. Major Extension activities include a Central Oregon Forage Information Day held annually in January, two field plot tours during the summer and a New Zealand Fencing and Pasture/Grazing Management Tour held annually in September.**

### Introduction

The following are research summaries of the trials being conducted by the Central Oregon Agricultural Research Center (COARC). Because of the earlier than normal deadline for this annual report, there was insufficient time to completely describe the following projects. If additional information is needed before next publication, please contact the author.

On-station COARC personnel helping out with the day-to-day activities in the forage program include Sylvia McCallum, Peter Tomseth, Pat Foltz, and 1993 summer help Jerod Williams. There has been much cooperation with other personnel not connected directly with the COARC unit. Randy Dovel, Klamath Experiment Station; Larry Burrill, David Hanaway, Shannon Springer, John Hart, Russ Karow, and numerous graduate students from the OSU Crop and Soil Science Dept.; Matt Kolding, Hermiston Experiment Station; Robert Metzger, USDA Retired; and Jim Sims, Montana State University have all aided in major or minor ways with the forage program at COARC.

### Forage Research and Extension Projects

Annual Legume Adaptation Trial: Thirty-eight and twenty-two varieties of small and large seeded annual legumes have been tested in 1992 and 1993, respectively. The

COARC (Powell Butte site), Klamath Experiment Station, and Hyslop Research Farm have been cooperating on these trials to assess the compatibility in their respective areas for rotation, forage and cover crop potential, and the post-year effect on subsequent crops due to their nitrogen fixing capabilities (Powell Butte). The trial may be run in 1994 as well.

Spring Forage Cereal Variety Trial: Four years (1990-1993) of testing spring rye, triticale, wheat, barley, and oat species and varieties was completed in 1993. Data on yield, height, lodging, harvest date by growth stage (either at late boot or soft to hard dough), and quality were gathered on these species and varieties. The trial was conducted at the Powell Butte site. Seeding rates in lb/ac based on 30 seeds/ft<sup>2</sup> have been documented. The Oregon Grains Commission has partially funded this study.

Winter Forage Cereal Variety Trial: Three years (1991-1993) of testing winter rye, triticale, wheat, barley, and oat species and varieties was completed in 1993. Yield, height, lodging, harvest date based on growth stage (cut at late boot and soft to hard dough), and quality were measured. Seeding rates in lb/ac based on 30 seeds/ft<sup>2</sup> have been documented. The trial was conducted at the COARC Powell Butte site. The Oregon Grains Commission has partially funded this study.

Long Term Weed Control Effects on Alfalfa Production: Three years of research on the long term effects of chemical weed control on alfalfa production have been completed at the COARC Powell Butte site and Klamath Experiment Station. Five different weed management schemes have been imposed on spring and fall planted alfalfa. The weed management ranges from herbicides applied annually to no weed control. Yield of alfalfa, grass weeds and broadleaf weeds, alfalfa quality, and stand persistence are being measured. The economics of weed control will also be determined. Chemical companies are partially funding this study.

Seedling Alfalfa Herbicide Trials: Three seedling alfalfa herbicide trials have been conducted on and off station (Mike McCabe and Paul Kasberger Farm) with varying degrees of results. The two off-station trials were rated only for percent control. The on station trial was rated visually for percent control of weeds, and three cuttings of hay yields were documented.

Dormant Alfalfa Herbicide Demonstration Trial: One year of testing was conducted comparing sencor, velpar and sinbar in a two-replication trial on station at the COARC Powell Butte site. Hay yields were documented for three cuttings.

New Zealand Forage Species Demonstration Trial: Matua prairegrass, Puna Chicory, Ellet ryegrass, and Wana orchardgrass were planted in the fall of 1991 and are being compared to an older stand of Potomac orchardgrass. The species have been in two years and the orchardgrass in for six years. There are four replications but no

randomization at the COARC, Powell Butte site. There are also spring planted 1993 plots of Matua prairiegrass that were planted with the 1993 spring forage cereal variety trial.

Annual Legume Residual Nitrogen Effects on Kanota Oat Hay Production: Kanota oats were planted over the 1992 annual legume trial in the spring of 1993. The oats were harvested for hay yield to determine if the oat hay production could be increased by any of the 38 annual legume varieties planted in 1992. This trial will be repeated in 1994.

Improving Nitrogen Fertilizer Recommendations for Hay and Pasture to Reduce Potential Ground and Surface Water Non-Point Pollution in Central Oregon: Two farm sites were chosen in Deschutes county, and four sites in Crook county to look at the effect of 0, 50, 100 and 150 actual units of N per cutting of grass or grass/legume on hay yield, quality, plant nitrogen uptake, and what amount of nitrogen is unaccounted for after two years. Deep soil sampling will be carried out to determine what amount of nitrogen is still left in the soil and what amount is unused or cannot be accounted for. The trial has been conducted in 1992 and 1993 with the soil testing in the fall of 1993. If more funding can be obtained, the soil may be retested in the spring of 1994 for N remaining, and the first cutting of the hay will be harvested. This trial is partially funded by the state of Oregon Regional Strategies fund.

Pasture Renovation Trial: Scheduled to begin in 1993 but postponed to spring 1994, this study will compare different methods of renovating pastures that might offer economic alternatives compared to the traditional destructive method of plowing out and rotating crops to help clean up the pasture before planting back to permanent pasture. This trial will be partially funded by DEQ.

Central Oregon Information Day: There have been three annual information days (1991-1993) held to present COARC research results as well as hear results from other Experiment Station researchers and Extension personnel speakers from other areas. The day is held in the latter part of January. These information days are co-sponsored with Crook, Deschutes, and Jefferson County Extension Service Offices.

New Zealand Fencing and Pasture/Grazing Management Tour: There have been two annual (1991-1992) New Zealand fencing demonstration and pasture/grazing management tours held in September 1992 and 1993. This tour is co-sponsored by Crook, Deschutes and Jefferson County Extension Service Offices.

Experiment Station Forage Plot Tours: To date (1990-1993), usually two plot tours have been held each summer. The dates change from year to year to ensure there is something to see and the trials can be seen at different growth stages.