2003 STEEP PROGRAM PROGRESS REPORT
1st INTERIM REPORT

TITLE: Biology and Management of Rattail Fescue in Direct Seed Cropping Systems

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PROJECT OBJECTIVES:
1. Determine basic biological characteristics for seed of rattail fescue. Seed characteristics to be studied include optimum seed germination temperatures, occurrence and characteristics of seed dormancy, seed longevity under field conditions, and whole plant vernalization requirements.

2. Coordinate and conduct multi-state herbicide trials to determine optimum treatment rates and timings for control of rattail fescue in chemical fallow systems.

3. Coordinate and conduct multi-state herbicide trials to determine optimum treatment rates and timings for control of rattail fescue in direct seed winter and spring wheat. Consideration will be given to carryover potential in pulse/brassica rotations. Cooperation with the agrichemical industry will be solicited to obtain appropriate herbicide registrations for rattail fescue control in PNW cereal crops.

4. Information will be disseminated to growers via field representatives, extension educators, field tours, and practical publications and to scientific audiences via publications and presentations.

STATEMENT OF PROBLEM: Concerns have been increasing among PNW dryland wheat producers about the incidence of rattail fescue (Vulpia myuros) in direct seed cropping systems. Control of this winter annual grass weed has been difficult in chemical fallow or prior to establishment of direct seeded spring or winter cereals. Although rattail fescue is not a new weed species in the Pacific Northwest, its incidence is expanding rapidly in circumstances where soil disturbances are minimized such as in direct seed systems. Very little information exists on the biology of this grass weed. Options for effective control without tillage in fallow and in cereal crops have not been adequately investigated, and need to be developed.

Information is needed on the longevity of seed viability in the soil, the presence (or absence) of seed dormancy, vernalization requirements, and about the optimum environmental conditions for seed germination and establishment under field conditions. Rattail fescue usually does not persist with high levels of tillage, but can tolerate the typical application rates of glyphosate used during chemical fallow periods in direct seed systems. This leads to increasing infestation levels of rattail fescue in chemical fallow and subsequent direct seeded cereal crops. More research is needed to determine optimum rates and timing(s) for herbicide application during fallow periods under a range of PNW agronomic zones. The effectiveness of potential herbicide treatments for
control of rattlefescue in dryland, direct seed winter and spring wheat systems is needed to secure appropriate herbicide registrations in the PNW.

**AGRONOMIC ZONE OF INTEREST:** Low, intermediate and high rainfall zones

**ABSTRACT OF RESEARCH FINDINGS:**
This project is just being initiated this fall. Field plots to evaluate rattlefescue in winter wheat have been established in eastern and western Oregon (one site each location), eastern Washington (2 sites), and northern Idaho (2 sites). Plots are located on naturally infested areas or, if needed, rattlefescue was broadcast seeded to establish a uniform infestation. Preemergence herbicide treatments were applied and wheat seeded. No evaluations have been made, to date. For chemical control studies in fallow, plot areas have been located (2 location each in OR, WA, and ID). If necessary, rattlefescue is being broadcast sown this fall to establish infestations. Herbicide treatments in chemical fallow will be applied this coming spring.

**RESULTS AND INTERPRETATION:** No results are available, as studies have just been established.

**INTERACTION WITH OTHER SCIENTISTS CONDUCTING RELATED RESEARCH:**
All of the listed investigators have previously cooperated on multi-state projects related to management of weeds in PNW dryland cropping systems. Yenish, Ball, and Thill are currently cooperating on a STEEP funded study "Vegetation management with herbicides during fallow periods in direct-seed, dry land winter wheat cropping systems in the PNW".

**PUBLICATIONS AND PRESENTATIONS:**
D. A. Ball, Rattlefescue – A New Weed, Presentation for the Washington State Weed Association Annual Conference, Yakima, WA. November 6, 2003.