INTRODUCTION
• Agriculture irrigation water shortage is more and more severe in eastern Oregon due to climate change, fish and wildlife habitat conservation, and competitive use with non-agricultural sectors.
• Livestock and forage production under irrigation is very important for Eastern Oregon economy and culture.
• Different perennial forages may respond to irrigation shortage differently.

OBJECTIVES
• Quantify the effects of seasonal deficit irrigation on 20 perennial forage species yield.

METHODS
• Irrigation treatments: 4
  ✓ 1) Full season irrigation (W1);
  ✓ 2) Late season deficit irrigation (W2);
  ✓ 3) Middle and late season deficit irrigation (W3);
  ✓ 4) No irrigation (W4).
• Perennial forage species: 20
  ✓ 1) PC3 Pasture: crested wheatgrass, intermediate wheatgrass, Idaho fescue, bluebunch wheatgrass, and great basin wildrye;
  ✓ 2) PC3 Hay: orchardgrass, meadow brome, tall fescue, perennial ryegrass, and timothy;
  ✓ 3) PC4: switchgrass (three cultivars), big bluestem, and indiangrass;
  ✓ 4) PL: alfalfa (two cultivars), sainfoin, birdsfoot trefoil, and cicer milkvetch.

RESULTS
• Averaged over twenty perennial forage species, full irrigation, late season irrigation shortage, early season irrigation shortage, and no irrigation produced 4.2, 3.7, 2.7, and 2.3 tons/acre forages, correspondingly (Figure 1).
• Specific perennial forage species exhibit drought adaptation better than others. Tall fescue and meadow brome is better than perennial ryegrass and timothy (Figure 2). Sainfoin is better than alfalfa (data not shown).

DISCUSSION
• We tested twenty perennial forage species under four irrigation treatments in order to find the best choice with each water availability scenarios. With less irrigation water available and applied, forage production will be decreased. However, the reduction of forage production is not same for every forage species selected. This will give us the opportunity to find the best match between forage species and irrigation water availability. Some species may not produce well under full irrigation but produce well under deficit irrigation compared with other species.
• There could be a best match between forage species selection and irrigation water availability.

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