4 winter wheat varieties:

* Puma from McKay Seed, Almira, WA
* Brundage 96 from Arron Carter, WSU
* SY Ovation from Juliette, UI Aberdeen
* WB1529 from Kurt Schroeder, UI

3 aphid treatments:

* Mfc
* BCOA
* control (no aphid)

4 replicates of each= 48 plots/cages

Planting date: September 13, 2021

Cage setup date: September 14-16, 2021

Emergence date: September 17, 2021

Infestation date: October 1, 2021

Aphid count date: October 8, 2021

Reflectance measurements: October 12, 2021

Visual damage assessments: October 12, 2021

First heavy frost: Monday, October 6, 2021

After first frost, aphid numbers declined but populations still strong. Mfc declined much more than BCOA. Even in my nursery cages, BCOA seem much more frost/cold tolerance than Mfc.

The experiment was done in the field at Parker Farm in Moscow, ID, USA. Untreated seeds of 4 varieties of winter wheat (Puma, Brundage 96, SY Ovation, and WB1529) were planted on September 13, 2021. Plots were planted at the normal seeding rate for winter wheat in northwestern Idaho: 800,000 seeds per acre. The early planting date was chosen to simulate early planting by growers and allow aphid populations to establish on cages before temperatures dropped too far. PVC cages (dimensions) were set up in the field and covered with “no-see-um” netting to prevent aphids from escaping and other species from infesting the cages.

2 weeks after wheat emergence, the cages were infested with either MFC, BCOA, or left with no aphids as controls. To infest plants, nursery colonies/cages were established outside on pots of Sprinter barley (BCOA) and Kelse winter wheat (Mfc) 1 month prior to infestation to acclimate aphids to field conditions. One potted plant was placed inside each cage, laid on its side with leaves fanned across emerging winter wheat in the cages to maximize source plant contact with the plants intended to be infested. Source plants had an average of X (4,000) aphids, estimated by counting the number of aphids on one leaf of the plant and the number of leaves on the whole plant for 5 plants from each species nursery cage. Source plants were removed from the cages 4 days after infestation.

Spectral reflectance measurements were taken to verify visual damage scale. Get reflectance methods from AliS.

Aphid densities in the cages were done this often and estimated by visually counting all aphids on 4 plants per cage, counting the number of plants per cage (40), finding the average aphids per 4 plants, and multiplying by 40 to find average number of aphids per cage.

Visible damage as discoloration was taken once in the Fall 2021 while taking reflectance data and done by using a visual scale. Make visual scale.