



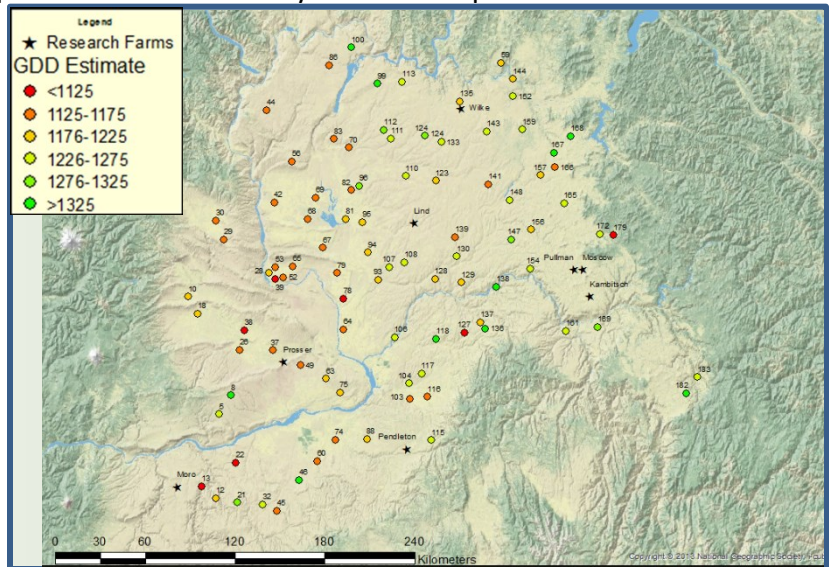
Downy brome management in future climate scenarios

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Management of downy brome (*Bromus tectorum* L.) is challenging and expensive in wheat. There is considerable variation among downy brome accessions for mature seed set following vernalization – mature seed set ranged from 930 to 1358 GDD (Base 0). That variation equates to a 3 week difference in seed set among downy brome accessions. Furthermore, the distribution of downy brome accessions is spatially significant with early maturing accessions found predominantly in the western production region of the Pacific Northwest (PNW). In future climate scenarios, the inland PNW climate likely to be a more suitable climate for earlier maturing downy brome, limiting opportunities for spring management inputs. If earlier developing downy brome become more prevalent in the eastern part of the region, a significant shift in down brome management tactics will have to occur. Effective inputs will likely have to be applied in the fall to mitigate seed production – a currently uncommon practice!



- Pictures shown, from top to bottom, are:
- 1) Top. Establishing a downy brome common garden near Pullman, WA. Common gardens are useful tools for phenotyping weed growth and development.
 - 2) Middle. Variation in seed set among downy brome collections grown in a common garden. From left to right, a fully mature seed head, a nearly mature seed head, a seed head with ~50% seed set, and a head with no mature seed. The heads were all collected on the same day. The collection number corresponds to the map (right). Almost three additional weeks were required for biotype #107 to produce viable seed compared to biotype #179.
 - 3) Right. A spatial representation of the variation in downy brome accession development across the inland Pacific Northwest. The redder the symbol, the earlier the downy brome produced viable seed in a common garden experiment.



This presentation was given at REACCH 2014 Annual Meeting. This handout and supplemental video are available at reacchpna.org. Funded through Award # 2011-68002-30191 from the USDA National Institute of Food and Agriculture.

