Widespread incidence of Barley Yellow Dwarf Virus (BYDV) – infected winter wheat and winter barley is evident throughout the Magic Valley from Buhl to Murtaugh. Symptoms include yellowing of leaves, stunting of plants both above and below ground (look for small root systems), and irregular heading with small heads in affected plants. Often, the most severe symptoms will occur along field edges and the edges created along the tracks of pivot tires. (Please see pictures.) There may also be a yellowing to a very characteristic reddening of leaves of infected weedy grasses in nearby ditch banks (Fig. 3), which also host the virus and aphids. Additional symptoms may also include notching of the leaf margins, twisting, leaf tip scorch, and abnormal development of emerging leaves.

Yield losses increase with earlier infections, and can approach 100% in severely affected fields, especially in early-infected winter barley. Fall infection occurred in 2012 as large populations of aphids migrating from other crops to newly emerged wheat or barley. Aphids are attracted to lush growth that occurs under irrigation, often leaving plants in dryland corners alone. Those plants emerging earlier or planted earlier were more likely to attract viruliferous aphids. A mild fall led to increases in aphid populations into December before a hard frost reduced their impact and subsequent transmission of virus.

The species of aphids that can carry the BYDV viruses are many, but the most common culprits include Bird cherry-oat aphids and English grain aphids. Greenbug and corn leaf aphids can also transmit the BYDV virus.

The virus strain identified by molecular techniques (by Dr. Alex Karasev, UI virologist in Moscow) was the PAV strain of BYDV, which is efficiently transmitted by the Bird cherry oat aphid (*Ropalosiphum padi*) and the English grain aphid (*Schizaphis avenae*). Aphids can pick up the BYDV virus from infected wild and cultivated grasses, volunteer cereals, and corn. The virus spreads only in conjunction with the movement of the aphid vector, and transmission is greater at low temperatures. The virus is not seed-borne.

At this point, reducing crop stress will reduce the effect of the virus on the plant, but yield losses will occur both through reduced grain production as well as reduced test weight. The most effective control is through the use of resistant varieties, but insecticidal seed treatments may reduce the initial spread in fall wheat and barley. Viruliferous aphids will still transmit the virus in the fall before the insecticides kill the aphid, but as the insecticides wear off over time, new invading aphids will continue to transmit virus.

Current aphid populations are very low, and spring wheat and barley should escape early infection. Reducing infection in the fall-planted grain includes adjusted (later) planting dates to avoid peak aphid activity, however, many of the currently infected fields were not planted early, but were simply actively growing during a long fall that had no killing frosts until well into December.

References:
Winter wheat ‘Garland’ with yellowing of infected leaves. The red leaves are weedy grasses (presumably) infected with BYDV. Juliet Marshall.