winds of more than 20 miles per hour cause dust storms from exposed beaches that impacts visibility and air quality in Tsay Key village. With funding and coordination by BC Hydro, we conducted a comprehensive 3-year field research project to evaluate methods to control blowing dust with various tillage practices. The basic tactic for the tillage is to bring silt-clay soil from the subsurface to the surface to provide durable roughness. Measurements included sand transport on the tilled versus check treatments using BSNE traps, detailed GPS mapping of sand transport into the tilled treatment from the check borders, surface roughness, and measurement of PM_{10} concentrations with E-Samplers. These measurements were obtained after every wind storm. A separate tillage spacing experiment, using both twisted-point chisel and lister implements, was conducted to evaluate the comparative effectiveness of the implements and determine whether the entire beach area needs to be tilled to control blowing dust or if alternating strips of tilled and non-tilled ground would be adequate. Results show that when there is silt or clay within 12 inches of the soil surface, tillage will produce a rough and stable soil surface. We know from our experiences that, to minimize blowing dust from Williston Reservoir, as much beach area as feasible should be tilled as any non-tilled areas will serve as source areas of blowing dust.

Fig. 1. Tillage experiments at North Davis Flats Beach on Williston Reservoir in 2010. The photo was taken from a helicopter. These experiments covered 385 acres of land area.

Winter Triticale Produces High Grain and Straw Yields in the Dryland Region

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Triticale is a cross of wheat x rye that is used as a feed grain. Although triticale has been produced on a small scale for several years, it has not been widely grown in eastern Washington due to the historically low market price of feed grains compared to wheat. This could change soon, however, due to the yield potential of winter triticale and the current high feed grain prices.

Winter triticale has been incorporated into the long-term cropping systems experiment on the Ron Jirava farm near Ritzville. We discovered through experimentation that winter triticale does considerably better than winter wheat from late (mid October or later) planting and we thought that triticale might be a good fit for no-till fallow. Early planting into no-till fallow in late August-early September summer is generally not feasible in the low-precipitation zone due to lack of seed-zone moisture. Winter triticale at the Jirava study is planted into no-till fallow.

The last two crop years at Ritzville have been considerably wetter than normal. With 12.30 inches of crop-precipitation in 2010, we produced 76 bushels/acre of 'Xerpha" winter wheat on tilled fallow and 4250 lbs/acre of late-planted 'TriMark 099' triticale (Fig. 1). Recrop no-till soft white spring wheat yielded 39 bushels/acre, or about half as much grain as the winter wheat and winter triticale.

Due to abundant precipitation in 2010, there was adequate soil moisture for early planting in the no-till fallow, so we planted half of each triticale plot early (Sept. 7) and the other half late (Oct. 20). Precipitation was again plentiful during the 2011 crop year with 13.01 inches received. Early-planted winter wheat yielded 75 bushels/acre whereas early-planted winter triticale yielded 6230 lbs/acre; the equivalent grain mass of 104 bushels of wheat (Fig. 1). The price a grower receives for triticale today (May 1, 2010) in

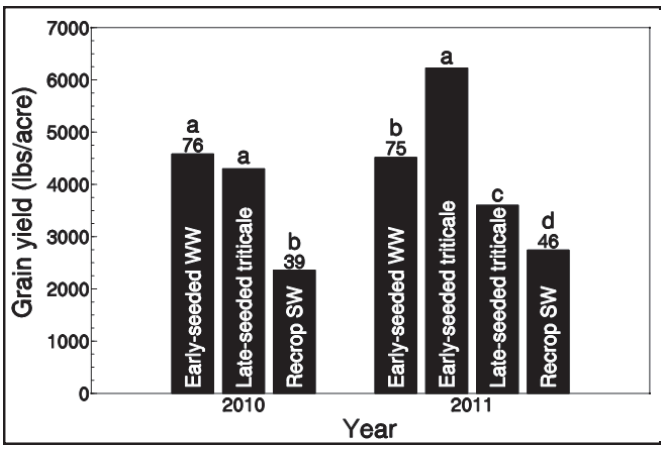

Fig. 1. Grain yield of 'Xerpha' winter wheat planted into tilled fallow, 'TriMark 099' winter triticale planted into no-till fallow, and continuous annual no-till 'Louise" spring wheat in the long-term cropping systems experiment near Ritzville, WA. Within-year grain yields followed by a different letter are significantly different at the 5% probability level.