production plots were harvested (2008 to 2011) and seed yield was determined (2011 data presented).

Results for 2011 (4th harvest) indicated that selection for seed yield components had a variable response and Kentucky bluegrass seed yield was primarily dependent on accession. Accession PI 368241 showed the best promise of being able to provide good turfgrass quality and seed yield under non-burn management in both non-irrigated and irrigated seed production (Fig. 1 and 2). One selection within Kenblue, seed/head, had good turfgrass quality and seed yield. These studies will be followed during 2012 to determine if the seed yields are sustainable.

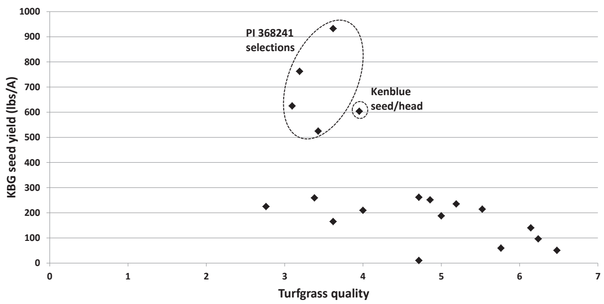

Fig. 1. Kentucky bluegrass non-irrigated seed yield vs. turfgrass quality (rated 1-9; 9 = excellent quality) at Pullman, WA, 2011.

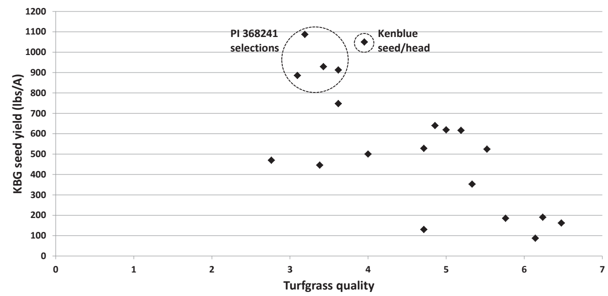

Fig. 2. Kentucky bluegrass irrigated seed yield vs. turfgrass quality (rated 1-9; 9 = excellent quality) at Pullman, WA, 2011.

Toward Better Prediction of Wind Erosion

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The Wind Erosion Prediction System (WEPS) was developed for assessing the impact of land management practices on wind erosion and to identify lands that are highly susceptible to wind erosion. Although WEPS has been tested and found to perform adequately across the Columbia Plateau, there have been many occasions when WEPS has failed to predict wind erosion during high wind events. Failure of WEPS to predict wind erosion is believed to be caused by overestimation of the threshold friction velocity of soils in the Columbia Plateau. Wind erosion only occurs when the friction velocity exceeds the threshold friction velocity of the surface, thus overestimation of threshold friction velocity will result in suppressed or no simulated erosion. Threshold friction velocities of soils found across the Columbia Plateau region are virtually unknown. We determined the threshold friction velocity of a sandy loam and four silt loams found in eastern Washington by systematically increasing wind speed and simultaneously measuring saltation activity and dust (particles ≤100 µm in diameter) concentrations above the soil surface inside a wind tunnel. An increase in saltation activity or dust concentrations above background levels signified the attainment of the threshold friction velocity. The threshold friction velocity of the sandy loam was about 0.14 m s^{-1} (0.3 mph) whereas the threshold velocity of the four silt loams ranged from 0.19 to 0.25 m s^{-1} (0.4 to 0.6 mph). The threshold friction velocities measured in this study were lower than the minimum threshold velocity required to initiate erosion in WEPS. These low threshold friction velocities may contribute to the occasional failure of WEPS to predict wind erosion in the Columbia Plateau.

Mild Freeze-thaw Cycles Improve Freezing Tolerance of Winter Wheat

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Autumn months in winter wheat–growing regions typically experience significant rainfall and several days or weeks of mild subfreezing temperatures at night, followed by above-freezing temperatures in the day. Hence, the wheat plants usually are first exposed to potentially damaging subfreezing temperatures when they have high moisture content, are growing in very wet soil, and have been exposed to several mild freeze-thaw cycles. These conditions are conducive to freezing stresses and plant responses that are different from those that occur under lower moisture conditions without freeze-thaw cycles. We have studied the impact of mild subfreezing temperature and freeze-thaw cycles on the ability of 22 winter wheat cultivars to tolerate freezing in saturated soil. Seedlings that had been acclimated at +4°C for 5 weeks in saturated soil were frozen to potentially damaging temperatures (-14 to -16°C) under four treatment conditions: (1) without any freeze-thaw pre-freezing treatment; (2) with a freeze -thaw cycle of –3°C for 24 hours followed by +4°C for 24 hours, (3) as in treatment (2) but with thawing at +4°C for 48 hours after