Regional nurseries, 2009 - Stripe (yellow) rust observations

1. Rossville, KS (from Bob Bowden, USDA-ARS, Manhattan, KS)
    a. Infection type according to X. Chen 1-9 scale (below)
    a. Severity percent on flag leaf at early milk stage
    b. For segregating lines, most common type is followed by less common type
    c. Green leaf area (GLA) based on 100% for four healthy green leaves per tiller on May 31, 2009
2. Washington (from Xianming Chen, USDA-ARS, Pullman, WA)
    a. Infection Type (IT) was recorded based on the 0-9 scale with ITs 8 and 9 combined as 8 (the most susceptible reaction) in field data. Generally IT 0-3 are considered resistant, 4-6 intermediate, and 7-9 susceptible. Heterogenous reactions of an entry were indicated by two or more ITs separated by "," for most plants with the first IT and few plants with the second IT or connected with "-" for entries containing plants with continuous ITs.
    b. Entries with a high IT in the first note, but a low IT in the second note may indicate that they have high-temperature, adult-plant (HTAP) resistance.
3. Greenhouse observations (from Xianming Chen, USDA-ARS, Pullman, WA)
    a. Tested with selected *Puccinia striiformis* f. sp. *tritici* (pst) races under controlled greenhouse conditions at low temperatures (diurnal temperatures gradually changing from 4 to 20c for the seedling tests) and at high temperatures (diurnal temperatures gradually changing from 10 to 30c for the adult-plant tests).
    b. * Infection Type (IT) was recorded based on the 0-9 scale with ITs 8 and 9 combined as 8 (the most susceptible reaction) in field data. Generally IT 0-3 are considered resistant, 4-6 intermediate, and 7-9 susceptible. Heterogenous reactions of an entry were indicated by two or more ITs separated by "," for most plants with the first IT and few plants with the second IT or connected with "-" for entries containing plants with continuous ITs.
    c. Entries with a high IT in the seedling test, but a low IT in the adult-plant test may indicate that they have high-temperature, adult-plant (HTAP) resistance.
    d. Virulence
        i. PST-37 is virulent on differentials 1,3,6,8,9,10,11,12.
        ii. PST-45 on 1,3,12,13,15; PST-100 on 1,3,8,9,10,11,12,16,17,18,19,20.
        iii. PST-116 on 1,3,4,5,8,9,10,11,12,14,16,17,18,19,20.
        iv. PST-127 on 1,2,3,5,6,8,9,10,11,12,13,15,16,17,18,19,20.
    e. DIFFERENTIALS: 1 = LEMHI (Yr21), 2 = CHINESE 166 (Yr1), 3 = HEINESE VII (Yr2,Yrhvii), 4 = MORO (Yr10,Yrmor), 5 = PAHA (Yrpa1,Yrpa2,Yrpa3), 6 = DRUCHAMP Yr3a,Yrdru1,Yrdru2), 7 = Yr5/6*AVS (Yr5), 8 = PRODURA (Yrpr1,Yrpr2), 9 = YAMHILL (Yr2,Yr4a,Yryam), 10 = STEPHENS (Yr3a,Yrste1,Yrste2), 11 = LEE (Yr7,Yr22,Yr23), 12 = FIELDER (Yr6,Yr20), 13 = TYEE (Yrtye), 14 = TRES (Yrtr1,Yrtr2), 15 = HYAK (Yr17,Yrtye), 16 = EXPRESS (Yrexp1,Yrexp2), 17 = Yr8/6*AVS (Yr8), 18 = Yr9/6*AVS (Yr9), 19 = CLEMENT (Yr9,Yrcle), AND 20 = COMPAIR (Yr8,Yr19).
    f. For the seedling tests, about 5 to 10 plants were used. Inoculation was done at the 2-leaf stage and incubated in the dew chamber at 10C for about 24 h in dark.
    g. The inoculated plants were then grown in a greenhouse growth chamber at a diurnal temperature cycle gradually changing from 4 C at 2:00 am to 20 C at 2:00 pm with a 16 h photoperiod in the day time. Infection type was recorded for the line about 20 days after inoculation
    h. For the adult-plant tests, One-leaf seedlings were strated to vernalized at 2-4C for about 6 weeks and vernalized seedlings were transplanted into a big pots. 3

i. plants were used in each race test. Inoculation was done at the boot to heading stages and incubated in the dew chamber at 10C for about 24 h in dark. The inoculated plants were then grown in a greenhouse growth chamber at a diurnal temperature cycle gradually changing from 10 C at 2:00 am to 30 C at 2:00 pm with a 16 h photoperiod in the day time. Infection type was recorded for each individual plant using the flag leaf about 20 days after inoculation