

Inheritance studies of Yellow Rust Resistance in Bread wheat (*Triticum aestivum* L. em. Thell)

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Abstract—Wheat is a major staple food of world population and occupies about 21.8 % of total cultivated area accounting 35.5 % of total food grain production at global level. Yellow rust is one of the most devastating diseases of wheat (*Triticum aestivum* L.) world wide. The disease is more destructive in temperate and cooler regions and it can cause yield loss. Genetic material generated by crossing WH 1105 (resistant parent) with yellow rust susceptible parents (WH 711 and Syn 27), comprised of their F_1 's and F_2 's were sown in the field at Research Farm of Department of Genetics and Plant Breeding, CCSHAU, Hisar during the year 2013-14. Disease pressure was generated by planting infectors rows and using artificial inoculum under field conditions using *Pst* (*Puccinia striiformis* Westend f. sp. *tritici*) isolate. In all plants, resistance components including latent period (days from inoculation to first pustule eruption) and infection type were recorded after appearance of pustules on leaves by using modified Cobb's scale. The data was subjected to statistical analysis using chi square test. Data of parents, 20 F_1 and 300 F_2 population were recorded for yellow rust reaction. Chi square (X^2) test was used to test the goodness of fit of expected ratio in segregating generations. Crosses involving with newly identified resistant sources WH1105 with two susceptible parents WH 711 and Syn27, all plants were resistant in F_1 generation and F_2 were segregated. Chi square test revealed that observed ratios were fit into hypothetical ratio of 15 resistant : 1 susceptible which clearly indicated that the resistance is controlled by duplicate gene action controlling resistance against pathotype 46S119 and 78S84.