***Abstract for presentation at the 2nd Plant Breeding Congress, 1-5 November 2015, Antalya, Turkey***

**Genotypic variation for frost tolerance in winter wheat**

Ram Sharma1, Amir Amanov2, Zafar Ziyaev2, Esbosin Sadikov3, Jozef Turok1, and Michael Baum4

1ICARDA, Tashkent, Uzbekistan

2Uzbek Research Institute of Plant Industry, Kibray, Uzbekistan

3Karakalpakstan Research Institute of Crop Husbandry, Chimbay, Uzbekistan

4ICARDA, Rabat, Morocco

**Abstract**

Frost is a major constraint to winter wheat in Central Asia. One-hundred fifty winter wheat genotypes were field evaluated for frost tolerance in two years (2014-2015) in Chimbay, Uzbekistan. One hundred seeds of each genotype were planted in 1 m2 plots at 2-cm and 4-cm depths. The number of plants in each plot was recorded before and after the winter. Snow was removed from the plots to expose the plants to frost. Winter temperatures were <-20°C in the 3rd and 4th week of February 2014, and in the last week of March in 2015. Frost tolerance was estimated as percent of plants that survived the winter. Seedling emergence above the ground was delayed by 1-3 days by deeper seeding. In 2014, there were significant (*p*<0.01) genotypic variations among 150 genotypes for winter survival (0 to 100%). The effect of planting-depth and genotype-by-depth interaction were significant for winter survival. The proportion of the genotypes with ≤20% frost kill were 25% and 65% at 2-cm and 4-cm depths, respectively. Root system was an important factor for frost survival under deeper seeding. Healthier root system allowed re-growth after the winter. The lines with ≤20% frost kill in 2014 were evaluated in 2015 at 2-cm and 4-cm depths. All lines survived winter in 2015. The five most frost tolerant lines were ‘20FAWWIR-144’, ‘15IWWYTSA-30’, ‘20FAWWSA-296’, ‘Victoriya’ and ‘15IWWYT-SA’. This study has identified frost tolerant winter wheat genotypes which could be further evaluated to identify new varieties or utilized as parents breeding programs.