kg/plant leaf, 9.63cc/plant oil it superseded the yield of the mother line and other cultivars of this species (all around 0.6 kg/plant leaf, 5cc/plant oil) even when grown with irrigation.

(C.R. Kole, Institute of General Genetics, USSR Academy of Sciences, Gubkin St. 3, 117809 Moscow B-333 USSR)

**Evaluation of winter rye (Secale cereale L.) and triticale after using physical and chemical mutagens**

It was decided to induce mutations separately in rye and triticale to obtain forms resistant to lodging. Seeds of rye cv. "Dankowskie Zlote" and triticale cv. "Lasko" were irradiated with fast neutrons and treated with MNH, rye cv. "LAD 2T80" was treated with only MNH. The mutant selection was made in M3 and the progenies were evaluated with regard to plant height. In total, 226 changed forms were found, most of them shorter than the control. Some of them should be useful as a source of resistance to lodging.

(E.J. Sawicka, R. Murani, The Botanical Garden of the Polish Academy of Sciences, Prawdziwka 2, 02-973 Warsaw, Poland)

**The use of plant tissue culture system in the mutagenesis of Secale cereale L.**

Among cereals, *Secale cereale L.* is the worst species for "in vitro" mutagenesis. In the case of seed mutagenesis of rye each seed is expected to be a different genotype and only somatic embryogenesis assures propagation towards numerous individuals possessing the same genotype. Therefore, another system of in-vitro mutagenesis is explored. Immature embryos were isolated from spikes of field growing plants. The established cultures were irradiated with 0.5; 1.0 and 1.5 kR gamma rays on the first day of the culture and after 6 weeks in culture. After irradiation all cultures were subcultured. For mutagenesis in general uniformity of the original material is very important. Therefore, in rye, irradiation of regenerated somatic embryos may be a good approach.

(J.J. Rybczynski, W. Kozlowska, D. Turzynski, The Botanical Garden of the Polish Academy of Sciences, Prawdziwka 2, 02-973 Warsaw, Poland)

**Effect of gamma radiation on immature winter wheat embryo culture**

The aim was to study the effect of mutagenic treatment on callus initiation, shoot differentiation and enhancement of the variation frequency and spectrum. Seven winter wheat genotypes were used as donors for immature embryos. Spikes 14 days after anthesis were treated with 4 Gy gamma rays, then embryos were isolated. According to the effect of gamma rays on the callus induction frequency (CIF) the genotypes were divided into three groups. In the first group we observed CIF stimulation (Kiyanka, Stepnyak, UK-8, Iironovskaya 61) as compared with the control (C); the second group - CIF on the C level (Mironovskaya 808, Kharkovskaya II) and the third group - CIF is lower than in C (Lutescens 7). Regeneration frequency was reduced greatly in all genotypes under mutagenic treatment. Variation has been found for plant height, number of productive tillers, length of vegetation period, spike morphology and size, awn type.

(N. Sidorova, V. Morgun, V. Logvinenko, A. Karpets, Institute of Plant Physiology and Genetics, Academy of Sciences of the Ukrainian SSR, Vasilkovskaya Str. 31/17, Kiev-22, USSR)