POTATO TRANSFORMATION (*Solanum tuberosum* L. cvs. *Baronesa and Macaca*) VIA *Agrobacterium tumefaciens* FOR THE PRODUCTION OF TRANSGENIC PLANTS RESISTANT TO THE POTATO LEAFROLL VIRUS (PLRV)

A.T. Ferreira; J.A. Peters; A.C. Torres; E. Romano; and D.C. Monte
Univ. Federal de Pelotas - UFPEL. Pelotas/RS; CNPH/EMBRAPA, Brasilia/DF; CENARGEN/EMBRAPA, Brasilia/DF, Brazil

Potato **Solanum tuberosum L.** Virus diseases are important worlwide due to the substantial economic losses provoked by them. Nowadays, it is possible to use breeding strategies for resistance to virus based on transgenic plants, bearing transgenes from plants or microorganisms, that are generated with high versatility and applicability. The main goal of this work was to obtain potato plants bearing genetic sequences corresponding to the replicase protein (pol) of the potato leafroll virus (PLRV) or a mutated form (ΔXBA) with a deletion in a characteristic sequence of the gene. The PLRV is one of the main virus diseases for this crop, it is transmitted by aphids and it replicates exclusively in phloematic cells. Infected tubers show necrotic symptoms that can reduce significantly the commercial value of production. Two commercial genotypes were used in our experiments (**cvs. Baronesa**

and Macaca 2x=4x=48) and two types of explants (internodes and leaves) in order to maximize the regeneration and trasnformation via **A. tumefaciens** through a binary system also containing the gene for kanamycin resistance. A constitutive promoter (35SCaMV) and a specific (BRA3) obtained through deletions in the promoter sequences of the **rolA gene of A. rhizogenes**. In order to evaluate the specificity of the expression, the promoter (BRA3) was tested with the β-glucuronidase gene, this construction was expressed in 56,9% of the obtained shoots. It was restricted to the vascular system (especially external phloem and xylem) of stems and petioles and not observed in the cortex, roots, leaves and tubers. The Baronesa cultivar and the leaf explants showed a lower efficiency for the regeneration of shoots whilst the cv. Macaca and internodes had a higher efficiency to be transformed. However the transformation reduced markedly the regeneration of the explants. The kanamycin resistant plants submitted to PCR testing showed a rate of 82,8% positives, guaranteeing the efficiency of the selection system. The phenotype of the transgenic plants bearing the BRA3 promoter is normal. Future tests will reveal the resistance of the transgenic plants to PLRV.