LAUFER, MARLENE[1] and MARK VARRELMANN[1]*, [1]Institute of Sugar Beet Research, Holtenser Landstrasse 77, 37079 Goettingen, Germany. **Interaction of Beet necrotic yellow vein virus with Beet soil-borne virus in different host plants.**

*Beet soil-borne mosaic virus* (BSBMV) and *Beet necrotic yellow vein virus* (BNYVV) possess a similar genome organisation with 4-5 ssRNA genome components, high sequence homology and a similar host range. Both species cause diseases in *Beta vulgaris* with variable symptom expression and tissue affinity. In the US, both viruses occur in mixed infection, but information about interaction between both species is limited. In order to understand the interaction with the hosts and between virus species, co-infection and reassortants experiments were performed. Initially, natural isolates of both species were used for mixed infection experiments in sugar beet by means of mechanical root infection, resulting in suppression of BNYVV by BSBMV. Further, infectious cDNA clones of BSBMV and BNYVV (A-type) were used for reassortants experiments in *N. benthamiana* and *Beta macrocarpa*. RNA1+2 reassortants were viable and displayed systemic movement in *N. benthamiana* but symptoms occurred delayed and were less pronounced. The RNA3 components of both species were transreplicated, mediated long-distance movement in *B. macrocarpa* and were exchangeable between species. Both virus clones were fluorescently labeled (GFP, mRFP) by replacement of the coat protein-readthrough open reading frame. Differentially labeled isolates of the same species as well as the two virus species were spatially separated and displayed co-infection exclusion in the host tissue in *N. benthamiana*. Separation of one species from an RNA1+2 reassortant showed that a specific genome component combination was not required for this effect. In contrast, mixture of both benyvirus species with either *Tobacco rattle virus* or *Potato virus X* displayed co-infection of the same cell. Generation of deletion mutants need to be performed to decipher the molecular basis for this effect.