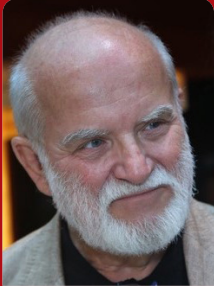


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# Plant Genomics and Plant Science

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### Interspecific crossings: Learnings and perspectives

As a breeder for pepper and squash for Sluis & Groot, author realized 6 interspecific introgressions of several genes of resistance into commercial varieties. The targets were in *Tobamovirus: pepper mild mottle virus* (TMV), *Tomato spotted wilt virus*, *Potyvirus*, in *squash Potyvirus* (*Zucchini yellow mosaic virus*, *Watermelon mosaic virus*), *Cytomegalovirus* (CMV), Powdery Mildew. Most of these resistances are now standards in the market and used by all the community of breeders when relevant. Interspecific crossings are difficult to perform and barriers of sterility must be overcome. All the resistances mentioned above are under control of monogenic dominant gene. Why? Because easier to track during the bridge process. These resistances have been challenged during these last 20-30 years leading to different situations. More surprising, some cases of genes interactions were discovered, unexpected pleiotropic effects appeared after combining weak genes. Introgression of interspecific traits into a cultivated species is one step. Another step is to create commercial products. The wild genes are coming surrounded by others inside the segment of introgression which could lead to deleterious effect. The story is different for each gene. The use of molecular markers and gene sequencing completely change the approach of interspecific transfer of traits. Tracking the gene(s) via molecular markers during the bridge process (from F1 to BC2-3) simplifies the operation. No need for phenotyping to follow the gene of interest. It opens the possibility to consider recessive genes and polygenic traits. The development of molecular markers inside the wild donor species is needed to use these markers. Highly density maps and fine mapping will help. But the segments of insertion and the expression of the genes in a very different background can still result in difficulties.

### Biography

Nicolet Jean Louis has 40 years of experience in seed industry and vegetable breeding. He has graduated as Agronomic Ingenieur ENSA Montpellier in 1973. He has experience of 41 years in Sluis & Goort then Syngenta and 15 years as Crops Manager. He is skilled in genetic, germplasm creation and management, pests resistances, interspecific crossings, abiotic stress resistance and molecular markers application.

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