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Czech J. Genet. Plant Breed.

A., Gruneberg W.,
Huamani K., Ma D.:

Ploidy level and molecular phylogenetic relationship among novel *Ipomoea* interspecific hybrids

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Interspecific hybridization can be used to broaden the genetic base, generate novel species, postulate genetic relationships, and to introgress elite alien genes.

However, interspecific hybridizations using wild parents outside the *Ipomoea* section *Batatas* are very difficult and have not been much studied. We used an improved hybridization technology to generate three novel interspecific hybrids by crossing *Ipomoea batatas* (L.) Lam. × *I. hederacea* Jacq., *I. batatas* (L.) Lam. × *I. muricata* (L.) Jacq., and *I. batatas* (L.) Lam. × *I. lonchophylla* J.M. Black. The

ploidy level of the interspecific hybrids was determined by flow cytometry. The cross, *I. batatas* × *I. hederacea*, yielded the first artificial pentaploid *Ipomoea* hybrid ever. The other two hybrids, *I. batatas* × *I. hederacea* and *I. batatas* × *I. muricata* were tetraploid. The first two hybrids showed normal storage roots, a significant improvement in the storage roots of currently existing interspecific *Ipomoea* hybrids. AFLP (Amplified Fragment Length Polymorphism) molecular markers were used to explore the genetic relationship of these three novel interspecific hybrids with three other natural diploid, tetraploid, and hexaploid species of the *Ipomoea* section *Batatas*. Cluster analysis of AFLP bands showed that these three new interspecific