The proposed introduction of genetically modified potato in the Andean region raises concerns about the unintentional introduction of transgenes into the native potato germplasm with possible negative impact on the cultural values of native communities. We investigated this question by searching for landraces that are the result of a natural hybridization event between a commercial variety and a landrace. The fertile commercial variety, ‘Yungay, has been widely cultivated in the Peruvian Andes over a long period of time, 15 to 25 years depending on the location. It is sympatric to landraces and can be regarded as exotic because it was bred in part from the southern Chilean germplasm of Solanum tuberosum Group Chilotanum. Hence, the search for a hybrid between ‘Yungay’ and a landrace can be seen as an ex post analysis of the unintentional introduction of transgene into the landrace germplasm following the release of a transgenic potato variety in its center of origin and diversity. To that end, three regions where ‘Yungay’ and landraces have coexisted for several years were selected: the Peruvian departments of Cuzco, Huánuco, and Junín. We sampled the landrace germplasm with a total of 1,771 samples comprising over 400 different landraces which were analysed by DNA fingerprinting. Simple sequence repeat (SSR) markers were used to identify putative hybrids based on 50% allele sharing with those of ‘Yungay’. The screening process was iterative starting with the SSR markers with highest discriminating capacity based on allele frequency of the variety ‘Yungay’ in our large database of 742 landraces by 50 SSR makers. With only 15 SSR markers, all of the samples could be rejected as possible hybrids with “Yungay” as a parent. This result demonstrates that the unintentional introduction of a transgene from a widely grown commercial potato over a long period of time is unlikely to happen at a detectable scale and reinforces the prominent role of farmers in the selection and maintenance of landraces which, unlike hybrids, have specific characteristics appreciated by them.

Keywords: Geneflow, Potato, Center of origin and diversity