

**Supplemental file 2** Selection of the experimental subset of cultivated and closely related wild species from the VIR potato collection

Step, year	Activities	No. of accessions in the subset for current step	No. of accessions excluded from the subset
1 2006	Choosing initial subset	636 (438 cult + 198 wild) accessions of all 7 cultivated species and 17 wild species (system of Hawkes, 1990) were presented by: 172 (142 cult. + 30 wild) accs. represented by VIR' tubers; +411 (243 cult. + 168 wild) accs. represented by VIR'seeds of 20-30-years-old reproductions; +53 cult. accs. in vitro from CIP	
2 2006	Testing the seed viability	411 accs. represented by VIR'seeds of 20-30-year-old reproductions were divided on 2 lots: (1) 99 accs. placed <i>in vitro</i> (77 cult + 22 wild) – seeds germinated in 35 accs. (29 cult + 6 wild); (2) 312 accs. treated by GA <sub>3</sub> (166 cult + 146 wild) – seeds germinated in 152 accs. (89 cult + 63 wild). In total seedlings from 187 (118 cult and 69 wild) species accessions have been obtained from VIR' seeds	- 224 ( 125 cult + 99 wild ) accessions with unviable seeds
2006		412 living accessions (313 cult + 99 wild) represented by plants	
3 2006	Rechecking passport data	After rechecking data in handwriting VIR' documents about 5000 new records have been filled for passport database of subset of 412 accessions.	- 35 (27 cult + 8 wild) accessions without data about geographic origin were excluded from subset

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4 2006	Chromosome counts	Chromosome counts were performed for 390 accs.; 348 accs. had chromosome numbers matching those published for the species.	- 42 (32 cult + 10 wild) accessions with 'incorrect' chromosome numbers
5a 2006	First morphological assessment of taxonomical important traits	Morphology of 308 (238 cult. + 70 wild) accs. corresponded to those taxonomic characters published for the species.	-27 (16 cult + 11 wild) accessions with gross taxonomic misidentifications were excluded from subset
5b 2006	Ability to form viable tubers		- 16 wild accs. did not form tubers or their tubers did not give sprouts
2007	Phenetic analysis	292 accs. (238 cult. )	
2008	SSR analysis (PIC, No. of alleles)	297 accs. (235 cult. + 62 wild)	
2008	The multivariate statistical analysis of SSR data	281 accessions (226 cult. + 55 wild) that have gaps less than in 4 SSR loci	-16 accs. which had a gaps more than in 4 SSR loci
2008	Cophenetic analysis	222 accs. cult.	

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