**Figure S2** Five categories of polymorphism markers which can be used in genetic study in double cross populations. In Category I or ABCD, each marker shows four identifiable alleles between the four inbred parents, represented by A, B, C and D (see the four different colors in Figure S1). In the double cross population, four genotypes can be identified, represented by AC, AD, BC and BD. In Category II or A=B, one allele can be seen in parents A and B, and two alleles can be seen in parents C and D. In the double cross population, only two genotypes can be identified, represented by XC and XD, where X can be either A or B. In Category III or C=D, two alleles can be seen in parents A and B, and one allele can be seen in parents C and D. The two identifiable genotypes in the clonal population are represented by AX and BX, where X can be either C or D. In Category IV or A=CB=D, parents A and C show the same homozygous genotype, and parents B and D show the same homozygous genotype. The two alleles in four parents are represented by A and B, and three genotypes in their progenies are represented by AA, AB and BB. In Category V or A=DB=C, parents A and D show the same homozygous genotype, and parents B and C show the same homozygous genotype. The two alleles in four parents are represented by A and B, and three genotypes in their progenies are represented by AA, AB and BB.