

Supplementary 1 – Example 1

#####

BOX 1 - PEDIGREE

PedigreeStatus ,Internal
NumberGenerationsBurnIn ,1
NumberGenerationsSelection ,4
NumberOfIndividualsInEachGeneration ,Variable,50,2,100,100,100

#####

BOX 2 - ANIMAL BREEDING OPTIONS

AnimalBreedingOnOff ,Off
NumberOfSiresInEachGeneration ,Constant,0
NumberOfDamsInEachGeneration ,Constant,0

#####

BOX 3 - PLANT BREEDING OPTIONS

PlantBreedingOnOff ,On
PerformMatingsConsideringTheGenderYesNo ,No
NumberOfMaleParentsInEachGeneration ,Constant,0
NumberOfFemaleParentsInEachGeneration ,Constant,0
NumberOfParentsRegardlessTheGenderInEachGen ,Variable,2,0,0,0,0
PerformSelfingInAtLeastOneGenerationYesNo ,Yes
NumberOfSelfedParentsInEachGeneration ,Variable,0,2,100,100
NumberOfGenerationsIncludingDoubledHaploids ,1
CreateDoubledHaploidsInTheseGenerations ,1

#####

BOX 4 - FLEXIBILITY

GenerationFlexibilityOnOff ,On
StartStopGeneration ,1,2
SelectionFlexibilityOnOff ,Off
ImportAnExternalPedigreeForThisGeneration ,2
ImportStagePut1ToComputeBV2ToContinue ,1
MergeTypes ,none
NumberOfMergeRuns ,0
MergeFiles ,none

#####

BOX 5 - CHROMOSOMES

UserMaCSHaplotypesYesNo ,No
PopulationHistoryMaCS ,internaltest
EffectivePopulationSizeBaseMaCs ,Internal
MutationRateMaCS ,Internal
ChromosomeLengthBasesMaCS ,Internal
ChromosomeLengthMorgansMaCS ,Internal
ChromosomeLengthMorgansAlphaSim ,Internal
NumberOfChromosomes ,7
NumberOfHaplotypes ,50
RecombinationHotspotsOnOff ,Off

#####

BOX 6 - SNP CHIPS

UseSnpChipOnOff ,Off
NumberOfSnpChips ,1
nSnpPerChipPerChromosome ,200
MinMaxAlleleFreqForSnp ,0.05,0.95
SnpChipIncludesQtnYesNoRandom ,No
SnpChipsAreNestedYesNo ,No
IdOfChipUsedForSelection ,1

#####

BOX 7 - QTN

UseOldQTNYesNo ,No
NumberOfQtnPerChromosomeNormalDist ,100
NumberOfQtnPerChromosomeGammaDist ,0
NumberOfMutationsPerChr ,0
MutationalVarianceProportion ,0
MinMaxAlleleFreqForModel2And4 ,0.0,0.30
ShapeAndScaleOfGammaDistForModel3And4 ,0.30,0.40
DominanceDegreeMeanAndVariance ,0.5,0.10
QtnClustersOnOff ,Off

#####

BOX 8 - RECOMBINATION

RecombinationOnOff ,Off
HeritabilityOfRecombination ,0
NumberOfQtnPerChromForRecombination ,0
InitialRecombinationIndexWeight ,0
NumberGenerationsSelectionOnRecombination ,0
LaterGenRecombinationIndexWeight ,0
DistributionOfQtnForRecombination ,Normal
ShapeAndScaleOfGammaDist ,0,0

#####

BOX 9 - GENE EDITING

GeneEditingOnOff ,Off
QtnEditSelectionMethod ,additive
EditFixedQtn ,Yes
SireEditMethod ,Top
DeltaFSiresEditOptContrib ,0
NumberOfEditedIndividuals ,2
NumberOfGeneEditsPerIndividual ,20
EditToPlusOrMinus ,Plus
NumberOfGametesPerSireLdEditOnly ,0
PerformGEOnUserQtnSelectionYesNo ,No
GeneDriveOnOff ,Off
GeneDriveEditingThreshold ,0.0
GeneticMapOnOff ,Off

#####

BOX 10 - SELECTION

```

SelectionBasedOnRestrictedOrUnrestrictedQtn      ,Unrestricted
DistributionOfQtnOfSelectionTraits              ,Normal
SelectionMethod                                  ,Pheno
AddQtnToTheSnpChipYesNo                        ,No
UseExternalSnpSolutionsYesNo                   ,No
SelectionPhenotypingStrategy                    ,0
FirstAndLastTrainingGenForRandomPhenotypesStrat ,0,0
TrainingSetSizeForRandomPhenotypesStrat        ,0
FixTheTrainingDataAcrossGenerationsOnOff       ,Off
UseTrainingDataFromGeneration                  ,0
ComputeAverageCoancestryYesNo                  ,No
GenerationsOfPedigreePriorToTraining           ,0
#####
BOX 11 - OPTIMAL CONTRIBUTION SELECTION
OptimalContributionSelectionOnOff              ,Off
SizeOfXvectPopulationAndMaxNbOfGenerations    ,0,0
PercentageDifferenceInbreeding                 ,0
#####
BOX 12 - TRAITS
NumberOfTraits                                  ,1
IndexWeights                                    ,1.0
TraitHeritability                              ,0.6
UseNarrowSenseHeritabilityYesNo                ,Yes
TraitGeneticVariance                           ,1.0
#####
BOX 13 - TRAIT CORRELATIONS
Genetic Correlation Matrix
1.0
Residual Correlation Matrix
1.0
#####
BOX 14 - OUTPUTS
KeepChromosomesFolderYesNo                     ,Yes
WriteFullSequenceOutOnOff                       ,Off
ZipSequenceOutputFilesYesNo                     ,No
#####
BOX 15 - GENOME COMPRESSION
GenomeCompressionOnOff                          ,Off
GenomeCompression                              ,0
#####

```

Supplementary 2 – Example 2

#####

BOX 1 - PEDIGREE

PedigreeStatus ,Internal
NumberGenerationsBurnIn ,1
NumberGenerationsSelection ,12
NumberOfIndividualsInEachGeneration ,Variable,
50,2,100,2,100,2,100,2,100,2,100,100,100

#####

BOX 2 - ANIMAL BREEDING OPTIONS

AnimalBreedingOnOff ,Off
NumberOfSiresInEachGeneration ,Constant,0
NumberOfDamsInEachGeneration ,Constant,0

#####

BOX 3 - PLANT BREEDING OPTIONS

PlantBreedingOnOff ,On
PerformMatingsConsideringTheGenderYesNo ,No
NumberOfMaleParentsInEachGeneration ,Constant,0
NumberOfFemaleParentsInEachGeneration ,Constant,0
NumberOfParentsRegardlessTheGenderInEachGen ,Variable,2,0,2,0,2,0,2,0,2,0,0,0,0
PerformSelfingInAtLeastOneGenerationYesNo ,Yes
NumberOfSelfedParentsInEachGeneration ,Variable,0,2,0,2,0,2,0,2,0,2,100,100
NumberOfGenerationsIncludingDoubledHaploids ,1
CreateDoubledHaploidsInTheseGenerations ,1

#####

BOX 4 - FLEXIBILITY

GenerationFlexibilityOnOff ,On
StartStopGeneration ,3,13
SelectionFlexibilityOnOff ,Off
ImportAnExternalPedigreeForThisGeneration ,2
ImportStagePut1ToComputeBV2ToContinue ,1
MergeTypes ,none
NumberOfMergeRuns ,0
MergeFiles ,none

#####

BOX 5 - CHROMOSOMES

UserMaCSHaplotypesYesNo ,No
PopulationHistoryMaCS ,internaltest
EffectivePopulationSizeBaseMaCs ,Internal
MutationRateMaCS ,Internal
ChromosomeLengthBasesMaCS ,Internal
ChromosomeLengthMorgansMaCS ,Internal
ChromosomeLengthMorgansAlphaSim ,Internal
NumberOfChromosomes ,7
NumberOfHaplotypes ,50
RecombinationHotspotsOnOff ,Off

#####

BOX 6 - SNP CHIPS

UseSnpChipOnOff ,Off
NumberOfSnpChips ,1
nSnpPerChipPerChromosome ,200
MinMaxAlleleFreqForSnp ,0.05,0.95
SnpChipIncludesQtnYesNoRandom ,No
SnpChipsAreNestedYesNo ,No
IdOfChipUsedForSelection ,1

#####

BOX 7 - QTN

UseOldQTNYesNo ,No
NumberOfQtnPerChromosomeNormalDist ,100
NumberOfQtnPerChromosomeGammaDist ,0
NumberOfMutationsPerChr ,0
MutationalVarianceProportion ,0
MinMaxAlleleFreqForModel2And4 ,0.0,0.30
ShapeAndScaleOfGammaDistForModel3And4 ,0.30,0.40
DominanceDegreeMeanAndVariance ,0.5,0.10
QtnClustersOnOff ,Off

#####

BOX 8 - RECOMBINATION

RecombinationOnOff ,Off
HeritabilityOfRecombination ,0
NumberOfQtnPerChromForRecombination ,0
InitialRecombinationIndexWeight ,0
NumberGenerationsSelectionOnRecombination ,0
LaterGenRecombinationIndexWeight ,0
DistributionOfQtnForRecombination ,Normal
ShapeAndScaleOfGammaDist ,0,0

#####

BOX 9 - GENE EDITING

GeneEditingOnOff ,Off
QtnEditSelectionMethod ,additive
EditFixedQtn ,Yes
SireEditMethod ,Top
DeltaFSiresEditOptContrib ,0
NumberOfEditedIndividuals ,2
NumberOfGeneEditsPerIndividual ,20
EditToPlusOrMinus ,Plus
NumberOfGametesPerSireLdEditOnly ,0
PerformGEOOnUserQtnSelectionYesNo ,No
GeneDriveOnOff ,Off
GeneDriveEditingThreshold ,0.0
GeneticMapOnOff ,Off

#####

BOX 10 - SELECTION

SelectionBasedOnRestrictedOrUnrestrictedQtn ,Unrestricted
DistributionOfQtnOfSelectionTraits ,Normal
SelectionMethod ,Pheno
AddQtnToTheSnpChipYesNo ,No
UseExternalSnpSolutionsYesNo ,No
SelectionPhenotypingStrategy ,0
FirstAndLastTrainingGenForRandomPhenotypesStrat ,0,0
TrainingSetSizeForRandomPhenotypesStrat ,0
FixTheTrainingDataAcrossGenerationsOnOff ,Off
UseTrainingDataFromGeneration ,0
ComputeAverageCoancestryYesNo ,No
GenerationsOfPedigreePriorToTraining ,0

#####

BOX 11 - OPTIMAL CONTRIBUTION SELECTION

OptimalContributionSelectionOnOff ,Off
SizeOfXvectPopulationAndMaxNbOfGenerations ,0,0
PercentageDifferenceInbreeding ,0

#####

BOX 12 - TRAITS

NumberOfTraits ,1
IndexWeights ,1.0
TraitHeritability ,0.6
UseNarrowSenseHeritabilityYesNo ,Yes
TraitGeneticVariance ,1.0

#####

BOX 13 - TRAIT CORRELATIONS

Genetic Correlation Matrix
1.0
Residual Correlation Matrix
1.0

#####

BOX 14 - OUTPUTS

KeepChromosomesFolderYesNo ,Yes
WriteFullSequenceOutOnOff ,Off
ZipSequenceOutputFilesYesNo ,No

#####

BOX 15 - GENOME COMPRESSION

GenomeCompressionOnOff ,Off
GenomeCompression ,0

#####

Supplementary 3 – Example 3

#####

BOX 1 - PEDIGREE

PedigreeStatus ,Internal
NumberGenerationsBurnIn ,1
NumberGenerationsSelection ,4
NumberOfIndividualsInEachGeneration ,Variable,50,2,100,100,100

#####

BOX 2 - ANIMAL BREEDING OPTIONS

AnimalBreedingOnOff ,Off
NumberOfSiresInEachGeneration ,Constant,0
NumberOfDamsInEachGeneration ,Constant,0

#####

BOX 3 - PLANT BREEDING OPTIONS

PlantBreedingOnOff ,On
PerformMatingsConsideringTheGenderYesNo ,No
NumberOfMaleParentsInEachGeneration ,Constant,0
NumberOfFemaleParentsInEachGeneration ,Constant,0
NumberOfParentsRegardlessTheGenderInEachGen ,Variable,2,0,0,0,0
PerformSelfingInAtLeastOneGenerationYesNo ,Yes
NumberOfSelfedParentsInEachGeneration ,Variable,0,2,100,100
NumberOfGenerationsIncludingDoubledHaploids ,1
CreateDoubledHaploidsInTheseGenerations ,1

#####

BOX 4 - FLEXIBILITY

GenerationFlexibilityOnOff ,On
StartStopGeneration ,3,5
SelectionFlexibilityOnOff ,Off
ImportAnExternalPedigreeForThisGeneration ,2
ImportStagePut1ToComputeBV2ToContinue ,1
MergeTypes ,none
NumberOfMergeRuns ,0
MergeFiles ,none

#####

BOX 5 - CHROMOSOMES

UserMaCSHaplotypesYesNo ,No
PopulationHistoryMaCS ,internaltest
EffectivePopulationSizeBaseMaCs ,Internal
MutationRateMaCS ,Internal
ChromosomeLengthBasesMaCS ,Internal
ChromosomeLengthMorgansMaCS ,Internal
ChromosomeLengthMorgansAlphaSim ,Internal
NumberOfChromosomes ,7
NumberOfHaplotypes ,50
RecombinationHotspotsOnOff ,Off

#####

BOX 6 - SNP CHIPS

UseSnpcChipOnOff ,Off
NumberOfSnpcChips ,1
nSnpcPerChipPerChromosome ,200
MinMaxAlleleFreqForSnpc ,0.05,0.95
SnpcChipIncludesQtnYesNoRandom ,No
SnpcChipsAreNestedYesNo ,No
IdOfChipUsedForSelection ,1

#####

BOX 7 - QTN

UseOldQTNYesNo ,No
NumberOfQtnPerChromosomeNormalDist ,100
NumberOfQtnPerChromosomeGammaDist ,0
NumberOfMutationsPerChr ,0
MutationalVarianceProportion ,0
MinMaxAlleleFreqForModel2And4 ,0.0,0.30
ShapeAndScaleOfGammaDistForModel3And4 ,0.30,0.40
DominanceDegreeMeanAndVariance ,0.5,0.10
QtnClustersOnOff ,Off

#####

BOX 8 - RECOMBINATION

RecombinationOnOff ,Off
HeritabilityOfRecombination ,0
NumberOfQtnPerChromForRecombination ,0
InitialRecombinationIndexWeight ,0
NumberGenerationsSelectionOnRecombination ,0
LaterGenRecombinationIndexWeight ,0
DistributionOfQtnForRecombination ,Normal
ShapeAndScaleOfGammaDist ,0,0

#####

BOX 9 - GENE EDITING

GeneEditingOnOff ,Off
QtnEditSelectionMethod ,additive
EditFixedQtn ,Yes
SireEditMethod ,Top
DeltaFSiresEditOptContrib ,0
NumberOfEditedIndividuals ,2
NumberOfGeneEditsPerIndividual ,20
EditToPlusOrMinus ,Plus
NumberOfGametesPerSireLdEditOnly ,0
PerformGEOnUserQtnSelectionYesNo ,No
GeneDriveOnOff ,Off
GeneDriveEditingThreshold ,0.0
GeneticMapOnOff ,Off

#####

BOX 10 - SELECTION


```

SelectionBasedOnRestrictedOrUnrestrictedQtn      ,Unrestricted
DistributionOfQtnOfSelectionTraits              ,Normal
SelectionMethod                                 ,Pheno
AddQtnToTheSnpChipYesNo                        ,No
UseExternalSnpSolutionsYesNo                   ,No
SelectionPhenotypingStrategy                   ,0
FirstAndLastTrainingGenForRandomPhenotypesStrat ,0,0
TrainingSetSizeForRandomPhenotypesStrat        ,0
FixTheTrainingDataAcrossGenerationsOnOff        ,Off
UseTrainingDataFromGeneration                  ,0
ComputeAverageCoancestryYesNo                  ,No
GenerationsOfPedigreePriorToTraining           ,0
#####
BOX 11 - OPTIMAL CONTRIBUTION SELECTION
OptimalContributionSelectionOnOff              ,Off
SizeOfXvectPopulationAndMaxNbOfGenerations     ,0,0
PercentageDifferenceInbreeding                  ,0
#####
BOX 12 - TRAITS
NumberOfTraits                                  ,1
IndexWeights                                    ,1.0
TraitHeritability                               ,0.6
UseNarrowSenseHeritabilityYesNo                 ,Yes
TraitGeneticVariance                            ,1.0
#####
BOX 13 - TRAIT CORRELATIONS
Genetic Correlation Matrix
1.0
Residual Correlation Matrix
1.0
#####
BOX 14 - OUTPUTS
KeepChromosomesFolderYesNo                     ,Yes
WriteFullSequenceOutOnOff                       ,Off
ZipSequenceOutputFilesYesNo                     ,No
#####
BOX 15 - GENOME COMPRESSION
GenomeCompressionOnOff                          ,Off
GenomeCompression                               ,0
#####

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Supplementary 4 – Example 4

#####

BOX 1 - PEDIGREE

PedigreeStatus ,Internal
NumberGenerationsBurnIn ,1
NumberGenerationsSelection ,8
NumberOfIndividualsInEachGeneration ,Variable,50,2,100,2,100,2,100,100,100

#####

BOX 2 - ANIMAL BREEDING OPTIONS

AnimalBreedingOnOff ,Off
NumberOfSiresInEachGeneration ,Constant,0
NumberOfDamsInEachGeneration ,Constant,0

#####

BOX 3 - PLANT BREEDING OPTIONS

PlantBreedingOnOff ,On
PerformMatingsConsideringTheGenderYesNo ,No
NumberOfMaleParentsInEachGeneration ,Constant,0
NumberOfFemaleParentsInEachGeneration ,Constant,0
NumberOfParentsRegardlessTheGenderInEachGen ,Variable,2,0,2,0,2,0,0,0
PerformSelfingInAtLeastOneGenerationYesNo ,Yes
NumberOfSelfedParentsInEachGeneration ,Variable,0,2,0,2,0,2,100,100
NumberOfGenerationsIncludingDoubledHaploids ,1
CreateDoubledHaploidsInTheseGenerations ,1

#####

BOX 4 - FLEXIBILITY

GenerationFlexibilityOnOff ,On
StartStopGeneration ,3,9
SelectionFlexibilityOnOff ,Off
ImportAnExternalPedigreeForThisGeneration ,2
ImportStagePut1ToComputeBV2ToContinue ,1
MergeTypes ,none
NumberOfMergeRuns ,0
MergeFiles ,none

#####

BOX 5 - CHROMOSOMES

UserMaCSHaplotypesYesNo ,No
PopulationHistoryMaCS ,internaltest
EffectivePopulationSizeBaseMaCs ,Internal
MutationRateMaCS ,Internal
ChromosomeLengthBasesMaCS ,Internal
ChromosomeLengthMorgansMaCS ,Internal
ChromosomeLengthMorgansAlphaSim ,Internal
NumberOfChromosomes ,7
NumberOfHaplotypes ,50
RecombinationHotspotsOnOff ,Off

#####

BOX 6 - SNP CHIPS

UseSnpChipOnOff ,Off
NumberOfSnpChips ,1
nSnpPerChipPerChromosome ,200
MinMaxAlleleFreqForSnp ,0.05,0.95
SnpChipIncludesQtnYesNoRandom ,No
SnpChipsAreNestedYesNo ,No
IdOfChipUsedForSelection ,1

#####

BOX 7 - QTN

UseOldQTNYesNo ,No
NumberOfQtnPerChromosomeNormalDist ,100
NumberOfQtnPerChromosomeGammaDist ,0
NumberOfMutationsPerChr ,0
MutationalVarianceProportion ,0
MinMaxAlleleFreqForModel2And4 ,0.0,0.30
ShapeAndScaleOfGammaDistForModel3And4 ,0.30,0.40
DominanceDegreeMeanAndVariance ,0.5,0.10
QtnClustersOnOff ,Off

#####

BOX 8 - RECOMBINATION

RecombinationOnOff ,Off
HeritabilityOfRecombination ,0
NumberOfQtnPerChromForRecombination ,0
InitialRecombinationIndexWeight ,0
NumberGenerationsSelectionOnRecombination ,0
LaterGenRecombinationIndexWeight ,0
DistributionOfQtnForRecombination ,Normal
ShapeAndScaleOfGammaDist ,0,0

#####

BOX 9 - GENE EDITING

GeneEditingOnOff ,Off
QtnEditSelectionMethod ,additive
EditFixedQtn ,Yes
SireEditMethod ,Top
DeltaFSiresEditOptContrib ,0
NumberOfEditedIndividuals ,2
NumberOfGeneEditsPerIndividual ,20
EditToPlusOrMinus ,Plus
NumberOfGametesPerSireLdEditOnly ,0
PerformGEOnUserQtnSelectionYesNo ,No
GeneDriveOnOff ,Off
GeneDriveEditingThreshold ,0.0
GeneticMapOnOff ,Off

#####

BOX 10 - SELECTION

```

SelectionBasedOnRestrictedOrUnrestrictedQtn      ,Unrestricted
DistributionOfQtnOfSelectionTraits              ,Normal
SelectionMethod                                 ,Pheno
AddQtnToTheSnpChipYesNo                        ,No
UseExternalSnpSolutionsYesNo                   ,No
SelectionPhenotypingStrategy                    ,0
FirstAndLastTrainingGenForRandomPhenotypesStrat ,0,0
TrainingSetSizeForRandomPhenotypesStrat        ,0
FixTheTrainingDataAcrossGenerationsOnOff       ,Off
UseTrainingDataFromGeneration                  ,0
ComputeAverageCoancestryYesNo                  ,No
GenerationsOfPedigreePriorToTraining           ,0
#####
BOX 11 - OPTIMAL CONTRIBUTION SELECTION
OptimalContributionSelectionOnOff              ,Off
SizeOfXvectPopulationAndMaxNbOfGenerations    ,0,0
PercentageDifferenceInbreeding                 ,0
#####
BOX 12 - TRAITS
NumberOfTraits                                  ,1
IndexWeights                                    ,1.0
TraitHeritability                               ,0.6
UseNarrowSenseHeritabilityYesNo                ,Yes
TraitGeneticVariance                            ,1.0
#####
BOX 13 - TRAIT CORRELATIONS
Genetic Correlation Matrix
1.0
Residual Correlation Matrix
1.0
#####
BOX 14 - OUTPUTS
KeepChromosomesFolderYesNo                     ,Yes
WriteFullSequenceOutOnOff                       ,Off
ZipSequenceOutputFilesYesNo                    ,No
#####
BOX 15 - GENOME COMPRESSION
GenomeCompressionOnOff                         ,Off
GenomeCompression                              ,0
#####

```