Quantitative and statistical genetics

ECTS

3

Mots clés

Sélection génomique, Modèle mixte, Heritability, Genomic evaluation, Héritabilité, Breeding, BLUP, Mixed model methodology, Animal, Amélioration génétique

Description du contenu de l'enseignement

Objectifs:
The goal is to provide students with a clear view of concepts and methods extensively used in the genetic analysis of quantitative traits and genetic evaluation of animals.
Contenu:
Main concepts in quantitative genetics: genetic and environmental values; genetic by environment interaction; additive and non additive genetic values; heritability; covariance between relatives; introduction to genetic parameters estimation.
Matrix algebra and computing strategies to solve large linear systems of equations.
Principles of genetic and genomic evaluation.
BLUP methodology: principles; derivation of the mixed model equations; properties; models to deal with a variety of concrete situations.

Compétences à acquérir

After taking this course, students:
Have a clear view of the main concepts used in quantitative genetics
- Are familiar with BLUP (Best Linear Unbiased Predictor) methodology applied to genetic and genomic evaluation
- Have a good view of the diversity of models to which BLUP can be applied
- Are able to perform a genetic evaluation on a small data set
Clear view of concepts used in quantitative genetics. To be familiar with mixed model methodologies and BLUP genetic and genomic evaluations.

Modalités d'organisation et de suivi

coordinateurs:
Vincent Ducrocq (DR INRA) & Etienne Verrier (PR AgroParisTech)
Equipe pédagogique:
Vincent Ducrocq (DR INRA), Etienne Verrier (PR AgroParisTech)

Langue

Anglais

Volume horaire

CM : 26h, TD : 13h

Période et lieu(x) enseignements

Période:
Octobre-Novembre
Lieu:
Paris-Jouy en Josas

Mode de contrôle des connaissances

Personal work, assignments.