Agroforestry lines, hedges, and aleas:
EcoAF wishes and limits

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Why this module? Some needs were identified

✓ A tool to draw future agroforestry parcels easily (for agroforestry advisors)
✓ An economical simulator: to help the choice between several plantation strategies (for agroforestry advisors, farmers,...), or to show the effect of specific choices (researchers for popularization,...)
✓ An playful economical simulator: for students
Context and actors

✔ SPEAL2 research project, granted by Centre Val de Loire
✔ Members of A2RC (regional agroforestry association): agroforestry advisors, farmers, agriculture chambers, regional parks, agronomic schools, institutes,...
✔ RMT AgroforesterieS, Agroof,...
✔ François, Nicolas, from INRA Montpellier (UMR AMAP) and the help of some other CAPSIS modellers
Why CAPSIS?

- Presentation during an INRA forest department conference: I was convinced! ;)
- Looked adapted to wishes with its simplified views and adaptable development method
- Already used for agroforests: HiSafe
Modellers-users co-development

✓ Modellers includes some end-users, especially the expert Agroof SCOP team, lead by Fabien Liagre, who already developed simulation tools as FarmSafe -> sharper vision of wishes and problems

✓ Wishes collected during any meeting opportunity, with potential end-users: agroforestry advisors, farmers, teachers,...

✓ Presentation and tests with end-users as often as possible

✓ Participatory research
Wishes ranking

✓ Scope = a parcel group: a farm... but some people would like to take in account the landscape: limited
✓ Drawing of tree lines, from straight (now) to complex and even without lines !: later
✓ Economics of trees, with different levels of variability and aleas: the most done now, but refined later
✓ Integration of soil databases: later
✓ Economics of inter-crops: later
✓ Impacts on bred animals: later
Parcels

✓ Several real farms will be included in the package as examples (now, one)
✓ The end-user integrates his own farm (via, most often, the agroforestry advisor), via the shapefile export of Telepac (= exploitation data of Politique Agricole Commune)
✓ Later, it will be possible to divide the parcel in several pedologic zones
Growth models

✓ Problem: numerous species are used in agroforestry, even in France... and the growth in fields is not like the growth in forests

✓ We intend to use available data: those collected by Agroof in first agroforestry lines,... but also to use expert knowledge...

✓ For upper limits, measures already done in old hedges or parks may be used

✓ Until june 2019: we will mesure the growth in various parcels, included those already measured before

✓ The result will be rough... but limits will be clearly exposed

✓ Now: a growth model for wild cherry, with no paying attention to soil quality
Participatory research

- A newbie in the e-phytia website+app portail (INRA Bordeaux)
- Objectives: allowing at-once return to the user, and better information on growth for several species
- Define how many trees to measure, which age, how to practice,...
- To be tested this year
Aleas

✓ The user choices imply different alea levels
✓ Quality of plants, handling of plants,…
✓ Pedoclimatic adequation of the species
✓ Occasionnal accidents (birds, machines,...) or large-scale ones
Parcel editor

**Edition of parcels, one by one with a 3D editor**

✓ Selection of a new one ➔ « add » or
✓ already drawn parcel ➔ « edit »
Parcel editor

Step by step edition

✓ Edit...
✓ Refresh the view with « Refresh » or « Enter »
✓ Results appear in the 3D view and in the Parcel summary
✓ Modify until you are satisfied ;)

Editeur de scénario d'agencement

Scénario d'agencement pour la parcelle : 9

Pour chaque Rubrique (Lignes, Positions...), ajouter et configurer des Agenceurs (de lignes, de positions...). Tous les Agenceurs sont modifiables à tout moment.
Help « ? » whenever necessary
Lines inside the parcel, example

- Parallel to a side
- A A B = pattern of 2 kinds of lines
Positions within lines

Parcel editor
Trees on positions

✓ Describe what you plant on each position type
✓ Depending of the plant quality, growth and alea will (later) differ
✓ ... here, second species/varieté

When 2 plants / position, space between 2 trees

Choice of the tree species

Height parameters
Strips between positions

- Hedge positionning
  - Proportion (%) of specific hedge species
  - Width, height
20 years later: one kind of viewing
Graph examples
Merci !

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