Terafor: DEXi-based multicriteria model to consider all multiple fonctions of tree formations in temperate agroforestery area

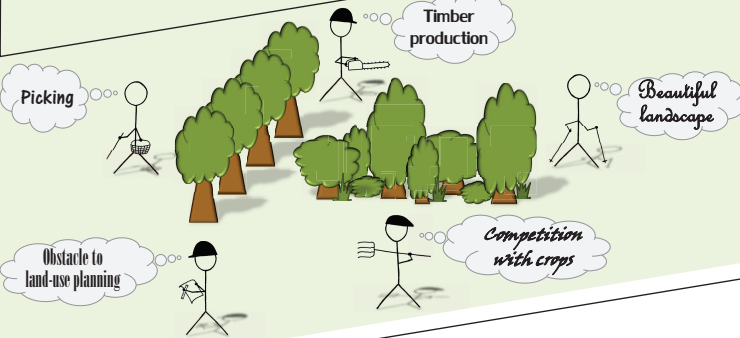**Vigan Martin** [1*], **Deconchat Marc** [1], **Ottogali Céline** [1], **Simon Laurent** [2]

1 - UMR Dynafor, INRA de Toulouse, Auzeville-Tolosane, France
2 - UMR LADYSS, Université Paris 1 Panthéon-Sorbonne, Paris, France

How do you **consider all functions** of tree formations ?

Tree formations:

- **Ubiquitous** in most temperate agricultural areas
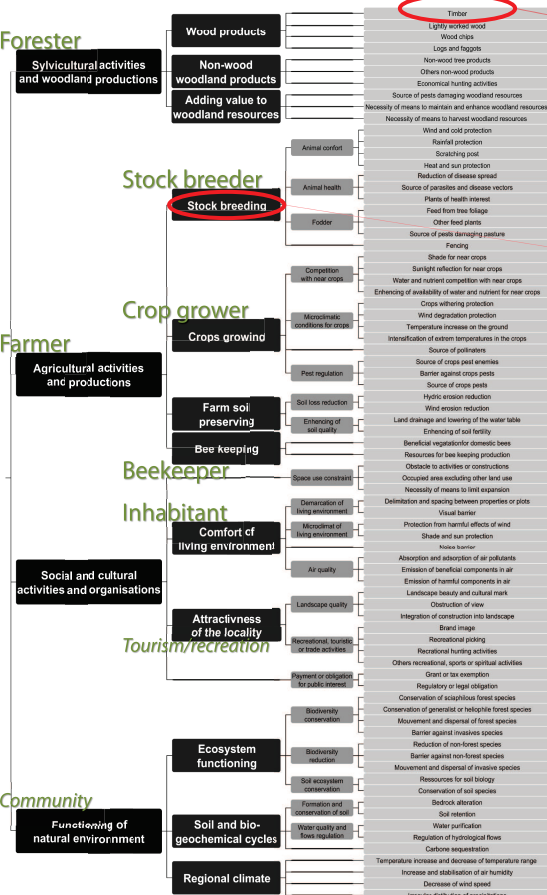- **Multiple functions**
- **Various stakeholders**

Photo credit: Dynafor

2) **Terafor model:**
to evaluate the effective functions of tree formations

DEXi-based model:

- hierarchical structure
- qualitative multicriteria analysis

1) **Terafor model:**
to represent the potential functions of tree formations

Construction of the model:

- more 40 scientific and technical works consulted
- 14 experts interviewed
- focused on **stakeholders**

Result:

- **77 functions** inventoried
- **3 aggregation levels**
- **36 supra-functions**

Timber

	NumberOfTrees	TreeMaintenance	SiteConditions	Timber
1	< 4	Negligle	Negligle	**Negligible**
2	< 4	Negligle	Significant	**Negligible**
3	< 4	Significant	Negligle	**Negligible**
4	< 4	Significant	Significant	**Negligible**
5	4 - 8	Negligle	Negligle	**Negligible**
6	4 - 8	Negligle	Significant	**Negligible**
7	4 - 8	Significant	Negligle	**Negligible**
8	4 - 8	Significant	Significant	**Significant**
9	> 8	Negligle	Negligle	**Negligible**
10	> 8	Negligle	Significant	**Significant**
11	> 8	Significant	Negligle	**Significant**
12	> 8	Significant	Significant	**Significant**

Negligible

Significant

Stock breeding

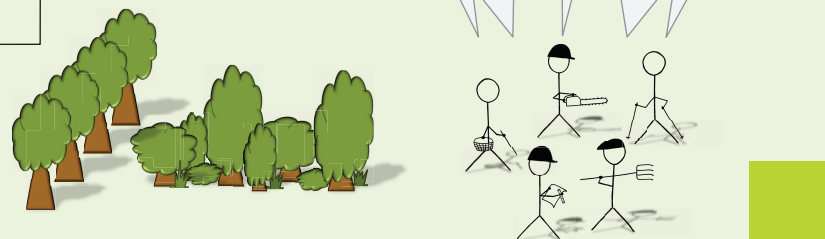|	AnimalConfort	AnimalHealth	Fodder	Fencing	StockBreeding
1	Weak	Negative	Negative	Negligle	Negative
2	Weak	Negative	Negative	Significant	Negative
3	Weak	Negative	Weak or disparate	Negligle	Negative
4	Weak	Negative	Weak or disparate	Significant	Weak or disparate
5	Weak	Negative	Positive	Negligle	Weak or disparate
6	Weak	Negative	Positive	Significant	Weak or disparate
7	Weak	Weak or disparate	Negative	Negligle	Negative
8	Weak	Weak or disparate	Negative	Significant	Weak or disparate
9	Weak	Weak or disparate	Weak or disparate	Negligle	Weak or disparate
10	Weak	Weak or disparate	Weak or disparate	Significant	Weak or disparate
11	Weak	Weak or disparate	Positive	Negligle	Weak or disparate
12	Weak	Weak or disparate	Positive	Significant	Positive
13	Weak	Positive	Negative	Negligle	Weak or disparate
14	Weak	Positive	Negative	Significant	Weak or disparate
15	Weak	Positive	Weak or disparate	Negligle	Weak or disparate
16	Weak	Positive	Weak or disparate	Significant	Positive
17	Weak	Positive	Positive	Negligle	Positive
18	Weak	Positive	Positive	Significant	Positive
19	Moderate	Negative	Negative	Negligle	Negative
20	Moderate	Negative	Negative	Significant	Weak or disparate
21	Moderate	Negative	Weak or disparate	Negligle	Weak or disparate
22	Moderate	Negative	Weak or disparate	Significant	Weak or disparate
23	Moderate	Negative	Positive	Negligle	Weak or disparate
24	Moderate	Negative	Positive	Significant	Positive
25	Moderate	Weak or disparate	Negative	Negligle	Weak or disparate
26	Moderate	Weak or disparate	Negative	Significant	Weak or disparate
27	Moderate	Weak or disparate	Weak or disparate	Negligle	Weak or disparate
28	Moderate	Weak or disparate	Weak or disparate	Significant	Positive
29	Moderate	Weak or disparate	Positive	Negligle	Positive
30	Moderate	Weak or disparate	Positive	Significant	Positive
31	Moderate	Positive	Negative	Negligle	Weak or disparate
32	Moderate	Positive	Negative	Significant	Positive
33	Moderate	Positive	Weak or disparate	Negligle	Positive
34	Moderate	Positive	Weak or disparate	Significant	Positive
35	Moderate	Positive	Positive	Negligle	Positive
36	Moderate	Positive	Positive	Significant	Positive
37	Strong	Negative	Negative	Negligle	Negative
38	Strong	Negative	Negative	Significant	Weak or disparate
39	Strong	Negative	Weak or disparate	Negligle	Weak or disparate
40	Strong	Negative	Weak or disparate	Significant	Positive
41	Strong	Negative	Positive	Negligle	Positive
42	Strong	Negative	Positive	Significant	Positive
43	Strong	Weak or disparate	Negative	Negligle	Weak or disparate
44	Strong	Weak or disparate	Negative	Significant	Positive
45	Strong	Weak or disparate	Weak or disparate	Negligle	Positive
46	Strong	Weak or disparate	Weak or disparate	Significant	Positive
47	Strong	Weak or disparate	Positive	Negligle	Positive
48	Strong	Weak or disparate	Positive	Significant	Positive
49	Strong	Positive	Negative	Negligle	Positive
50	Strong	Positive	Negative	Significant	Positive
51	Strong	Positive	Weak or disparate	Negligle	Positive
52	Strong	Positive	Weak or disparate	Significant	Positive
53	Strong	Positive	Positive	Negligle	Positive
54	Strong	Positive	Positive	Significant	Positive

Negative

Positive
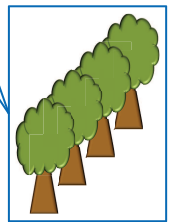
Towards **a discussion-making tool**

- to design shared projects involving trees in agricultural areas
- to facilitate the stakeholders' participation