



Challenging land fragmentation

Thanks to a mobile robot...

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Dairy production background in (western) France

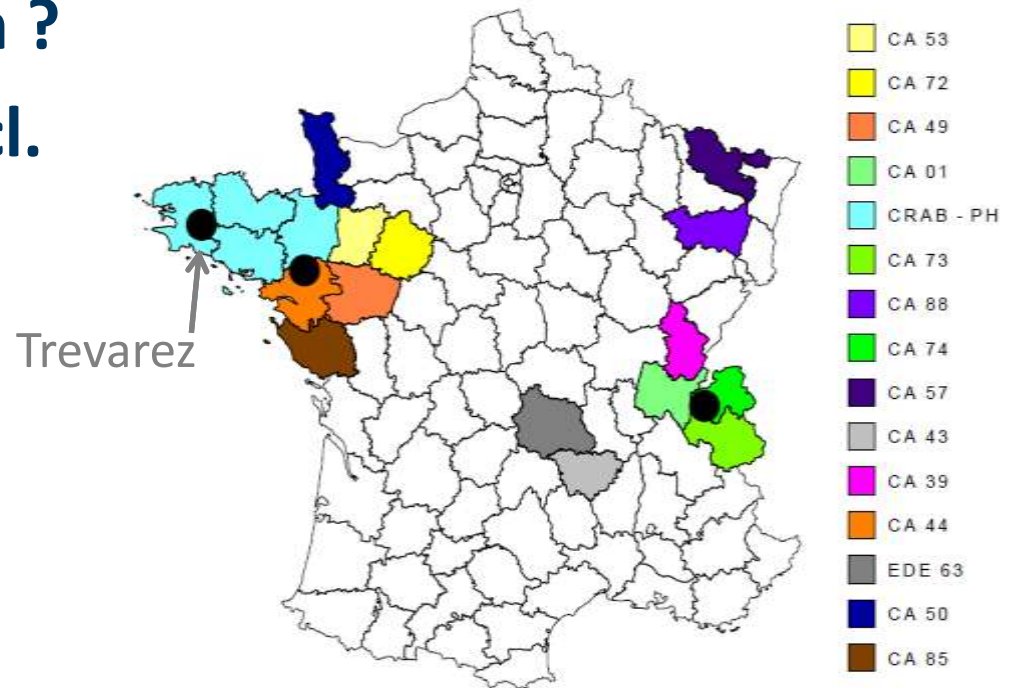
- ▶ Main types of management strategies and production systems
- ▶ Feeding system : grazed grass – maize silage- 140 g concentrate per litre milk
- ▶ Increase in herd size (av. 55 cows) and quota still linked to ground
 - Destruction of field organisation
 - Decrease in grazeable area per cow around buildings
- ▶ Increase in purchases of AMS to limit compulsory working time





The French research program on robotic milking and grazing

- ▶ How to integrate grazing in a robotic milking system ?
- ▶ 3 experimental sites incl. Trevareze, 21 pilot farms
- ▶ 4 years
- ▶ Various production systems and climates : plains / mountains



Transferring knowledge :
User's guide for the robot owner to develop a rearing system based on grazed grass





Trevarez experimental farm

- ▶ Located in western France, cool and wet situation (average rainfall : 1260 mm); oceanic climate
- ▶ Applied research dairy farm with 150 Holstein cows + 140 heifers- 1,180,000 l of quota- 183 ha
- ▶ Target : maximising milk from forages – grazed grass

Variable costs per energy unit :

Grazed grass	Stored forages (maize or grass silage, hay)	Concentrate
1	4	15





The three farmlets in Trevarez

▶ 3 systems implemented to fit with main farmers issues in Brittany



2009 to 2011?	S1 Limited access	S2 Average access	S3 Limited access
Nbr of cows	48	54	45-60
Grazed grass per cow (ha)	0.15	0.38	0.35+0.15

Limited grazable area
Maize silage and conc
9,000 kg milk/cow

Milk from forages
Grazed grass
100 g conc/ l milk
7,500 kg milk/cow

Milk from grass
Mobile robot
Organic prod

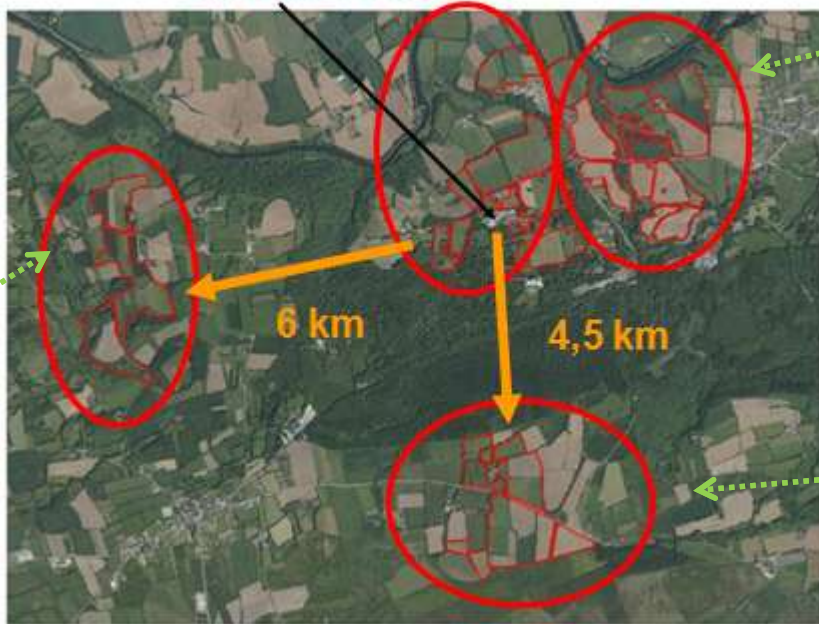




Trevarez experimental farm : 44 ha of grazable area / 183

▶ As many Breton farms, facing land fragmentation: 4 blocks, distances, road traffic, ...

Trévarez farm



Original site
2 blocks split by main road

275 m asl :
Cold and wet
Good grass growth
Not suitable for crops



How to graze the remote areas...a modern way ?

- ▶ **Grazed grass : base of forage system (cost, working time, environmental restraints...)**
- ▶ **New demands on good profile fatty acids, animal welfare**
- ▶ **KEEP GRAZING !!!**

- ▶ **Solutions to graze the non grazeable area ?**
- ▶ **Give modern outlook to grazing ?**
- ▶ **Bring robotic milking into grass based systems ?**



The solution ? Move cows and milking parlour

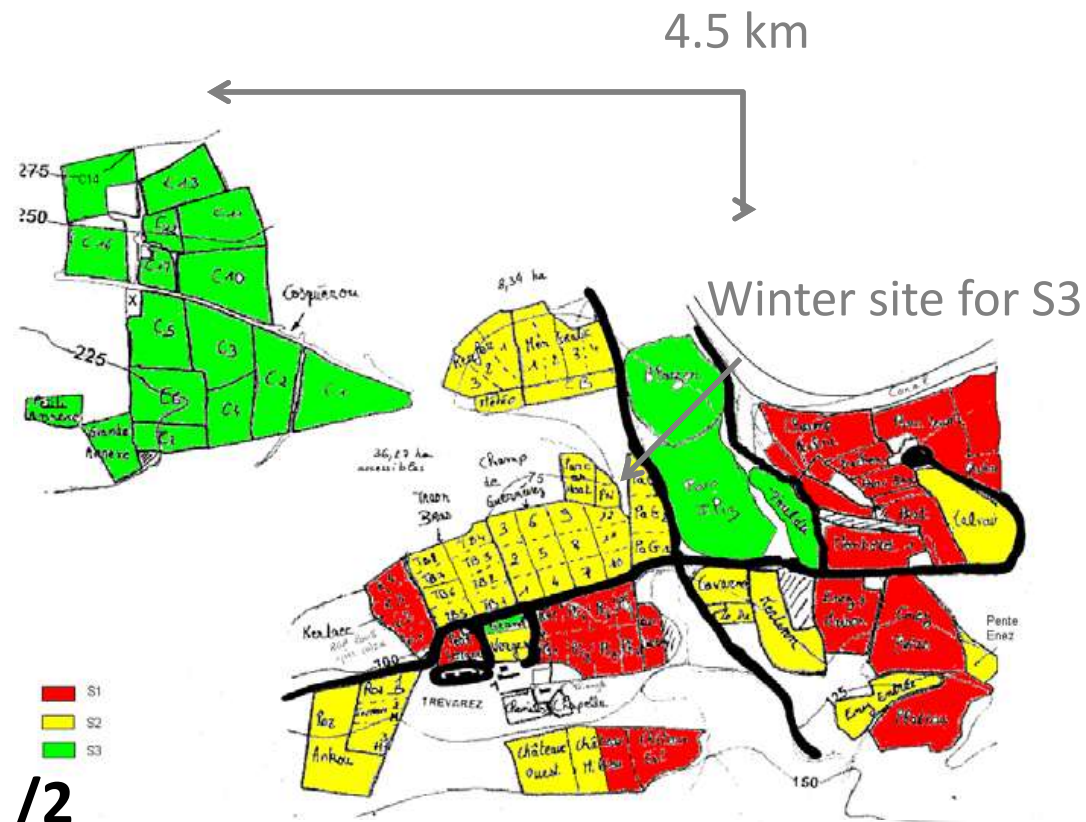
- ▶ Graze the current non grazeable area thanks to mobile robot
- ▶ Moved twice a year in average climatic conditions:
 - 1 summer location (15th April-15th October)
 - 1 winter location in new barn (grazing in transition periods)
- ▶ Review of existing prototypes
- ▶ Many trips through Europe
- ▶ European project (Autograssmilk)
- ▶ French Research program and funding





Field allocation for the 3 systems

Summer site for S3



- ▶ Choice of the summer site /2
- ▶ Winter site with new building





2 options for the mobile robot

- Political + technical agreement : 2 years
- specifications written – call for tenders
- 2 options



- mobile robot on a trailer + platform
- Funding completed July 2011 (400,000 €)



The prototype and its design

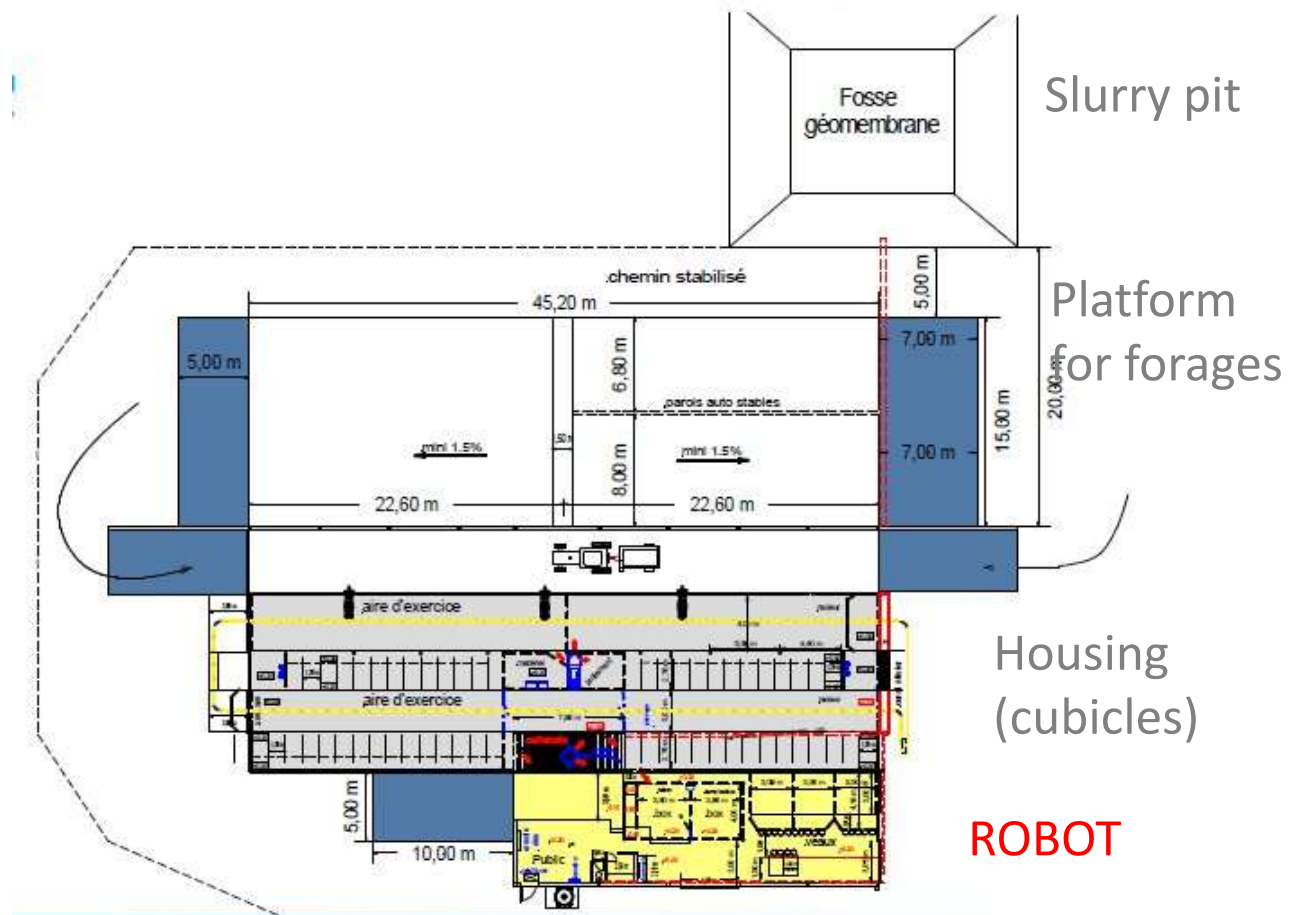
- ▶ The "Belgian" solution with two trailers (Rolland SA)
- ▶ 1 Delaval AMS on a trailer
- ▶ 1 trailer for the milk tank





The winter site

- ▶ New barn for 60 cows
- ▶ 0.15 ha per cow for grazing
- ▶ 2 groups possible
- ▶ Winter trials on organic diets





Winter site June 2012

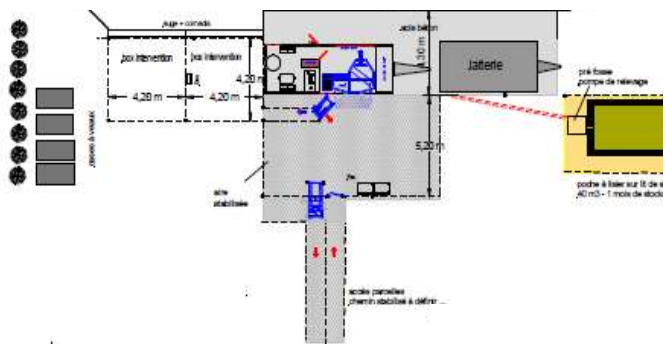
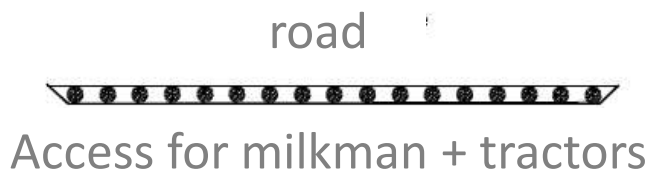
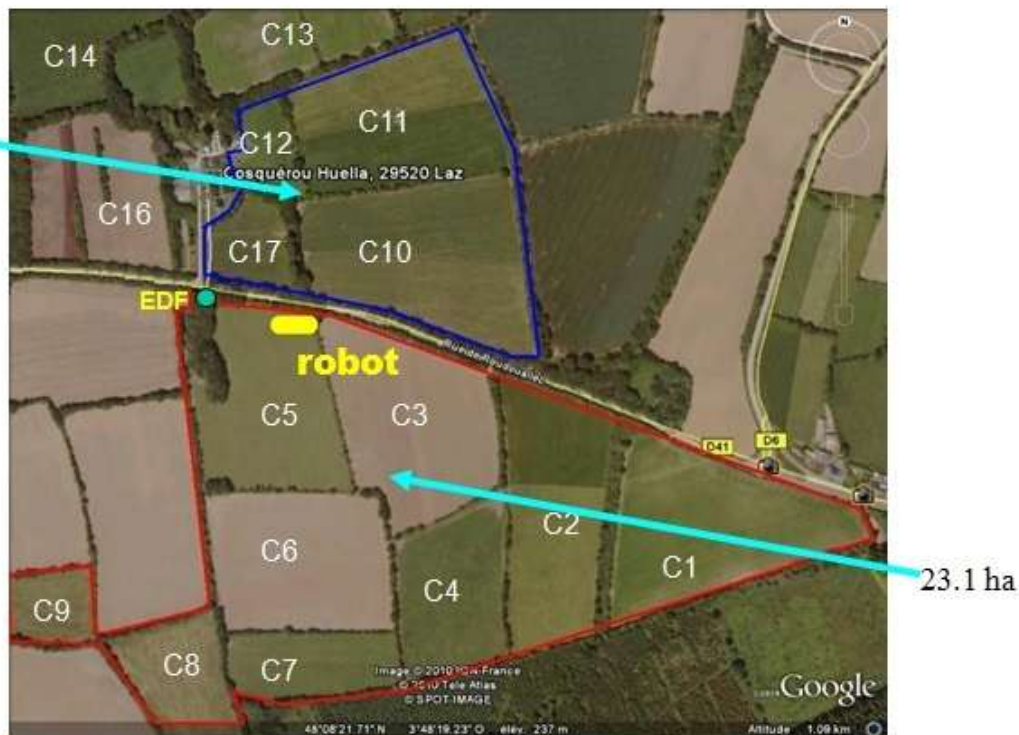
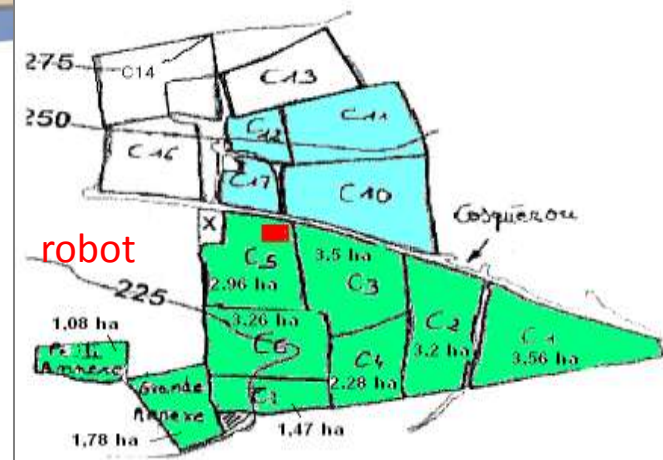
▶ "Innovative building"





The summer location : stabilized platform

- ▶ 0.35 ha grass per cow
- ▶ Road crossing if necessary (dry conditions)





The production system : organic, self sufficient and modern

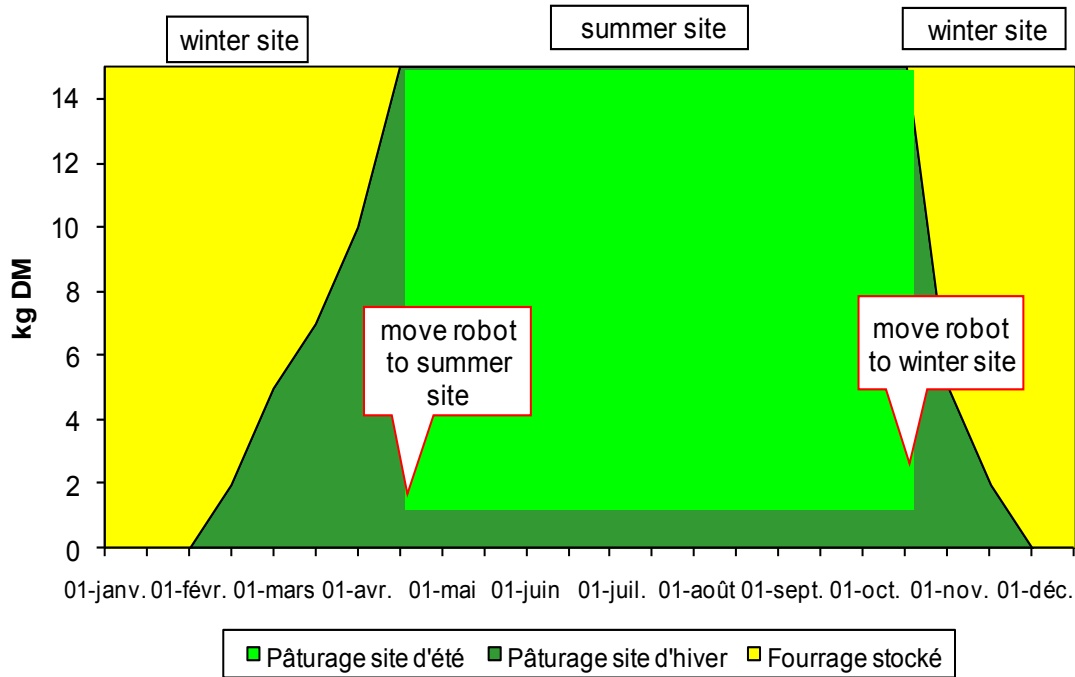
- ▶ 45 (...60) Holstein high genetic merit cows
- ▶ 8-9 months grazing per year (3-4 months : 100 % grass diet) ; 700 kg concentrate per cow per year
- ▶ 7,000 kg milk per cow per yr expected
- ▶ Autumn / spring block calvings
 - ▶ Where to feed calves ?
 - ▶ Ais or calvings in a "remote" area ?
- ▶ OAD milking and crossbreeding : future options
- ▶ Maximising milk from AMS and grass (not per cow)



The forage system

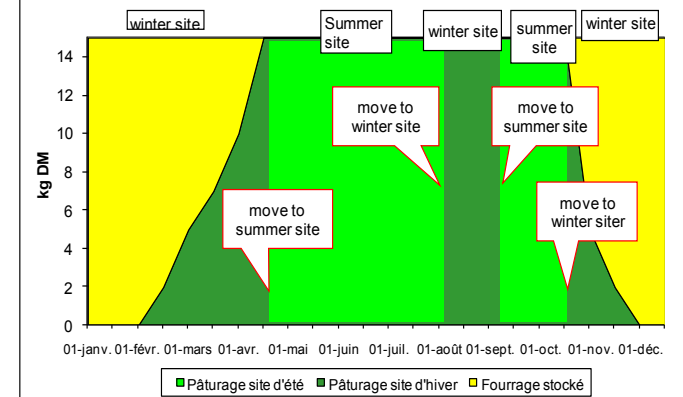
▶ In an average climatic year : 2 transfers of cows+robot per year

forage calendar average year



Dry year : 4 transfers

Forage calendar unfavourable year (1 yr/4)





The targets of the experiments

- ▶ Test of a mobile prototype in a remote area : technical issues, wild animals, water and energy supply, WIFI, waste water storage and treatments
- ▶ Evaluation and improvement of **cow traffic** according to fields and tracks design
- ▶ Effects of concentrate / buffer feed
- ▶ Effect of increased number of cows
- ▶ Assess economic efficiency, working time, environmental impacts, acceptability by (organic) farmers, dairy industry and citizens...





State of the project

▶ 2012:

February : robot and trailers ordered

June : building finished and robot+trailers delivered

July : start of robot and building in use

September : first turning out of cows on winter site.

▶ 2013:

February to late April : cows out grazing on winter site.

Late April : summer site in use

2014: first analytic experiments



Conclusion

The issues around the mobile robot

- ▶ Reliability of the prototype
- ▶ Milk collecting and milk quality
- ▶ ...WORKING TIME AND CONDITIONS / COSTS :
↑ fixed vs variable ↓
- ▶ Transfer into other regions : modern version of
“transhumance” for mountains areas ?



Poisy
experimental
farm (Alps)





Thank you for your attention !

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▶ OPEN DOORS 14-15th of June, 2012

CAP TRÉVAREZ 2012

Produire du lait après 2015
Des résultats de RECHERCHE pour préparer l'AVENIR

14 & 15 Juin 2012
Portes ouvertes

15 ateliers

- 3 systèmes pour produire du lait : à chacun sa solution
- Allongement des lactations c'est possible
- Séparation de process pour mieux répartir les engrais de ferme
- Du couva fourrage pour renouveler les prairies
- Informations actualisées sur les vaches : quelle utilisation concrète ?
- Nouvelles normes environnementales : enjeux et impacts
- Des solutions innovantes pour produire du maïs
- Et aussi : élevage des génisses, affouragement en vert, variétés d'herbe...

2 conférences en après-midi

- La production de lait chez nos voisins canadiens : présence d'experts hollandais et irlandais
- Des outils pour s'adapter aux marchés

Contacts :

Station de Trévarez 901 - Gennes, Finistère
tel: 02 98 00 83 36
www.ideal.fr/idele/actualites/2012/06/01/14-15-juin-2012

INRA Herbivores
tel: 02 98 00 49 06
www.cvarm2012.com/idele/cap12

Pour venir nous voir contactez le plan d'accès sur www.bretagne.chambagri.fr rubrique actualités.

Le réseau des stations laitières du grand Ouest

Un fil rouge : l'Agriculture Écologiquement Intensive

Travaux de site de recherche multi-espèces/élevages

Logo Institut de l'Élevage



