Drivers of changes in Mediterranean extensive livestock systems: a micro-econometric analysis of a Corsican area

Jean Christophe Paoli

HAL Id: hal-02798368
https://hal.inrae.fr/hal-02798368

Submitted on 5 Jun 2020

Drivers of changes in Mediterranean extensive livestock systems: a micro-econometric analysis of a Corsican area.

Nap...
INRA

Claim

Supporting the role of the Common agricultural policy in LAndscape valorisation: Improving the knowledge base of the contribution of landscape Management to the rural economy

www.claimproject.eu
info@claimproject.eu

Does the CAP favors forest fires in Mediterranean moutain ?

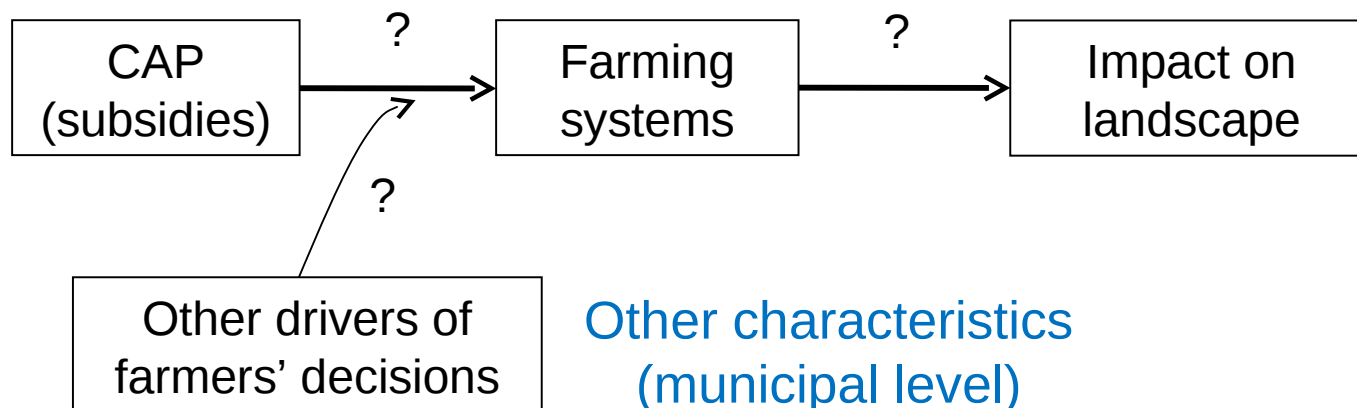- Relationships between the farming system favored by the CAP subsidies and the evoluti of natural pastures?
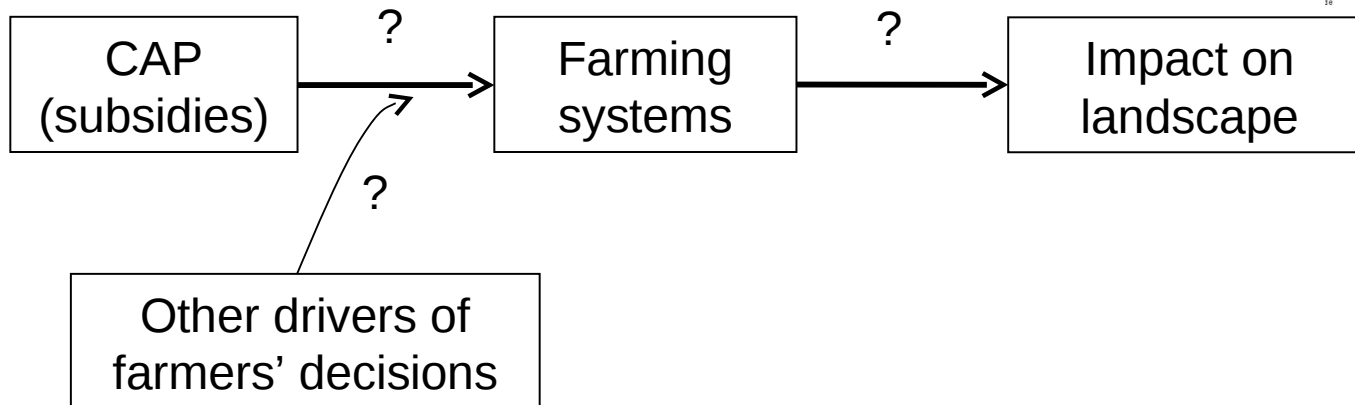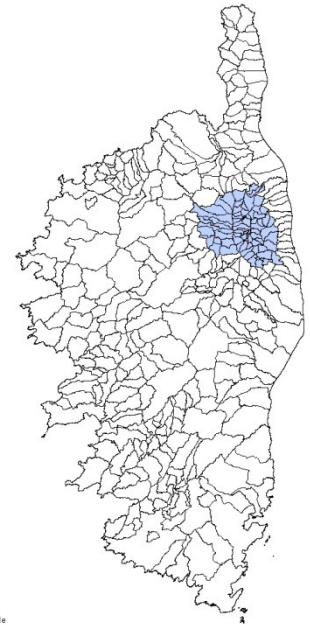
```
┌──────────────┐   ?    ┌──────────────┐   ?    ┌──────────────┐
│ CAP          │ ─────> │ Farming      │ ─────> │ Impact on    │
│ (subsidies)  │        │ systems      │        │ landscape    │
└──────────────┘        └──────────────┘        └──────────────┘
        ?
┌──────────────────────┐
│ Other drivers of     │
│ farmers' decisions    │
└──────────────────────┘
```

Material and methods

Use of remote sensing to evaluate the vegetation changes

- Necessity to get an accurate vegetation cover

- Available data not accurate (IGN Forest DB, Corin Land Cover).

- Use of remote sensing from SPOT satellite images of 1994 and 2012 with 20m resolution.

| CAP (subsidies) | ? → | Farming systems | ? → | Impact on landscape |

?

Other drivers of farmers' decisions
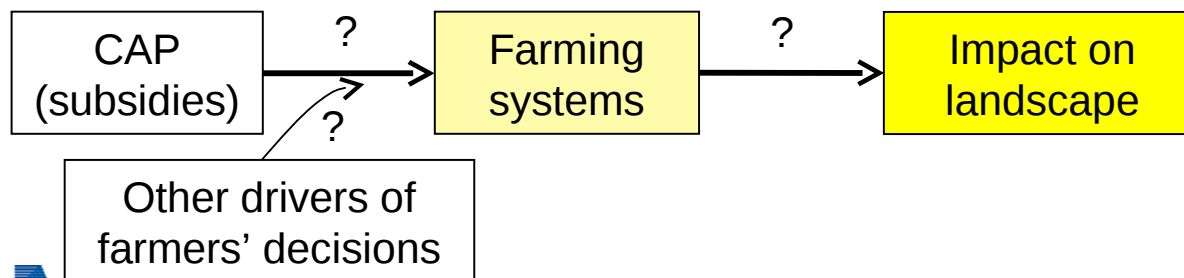
Vegetation analysis: method

- Check the reference points on field with a GPS

- The reference points are added in the remote sensing software Multispec

- Execution of a supervised classification using Minimum Euclidian Distance method for the 2 images (1994 et 2012)
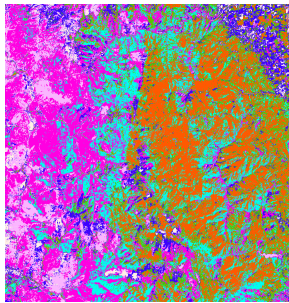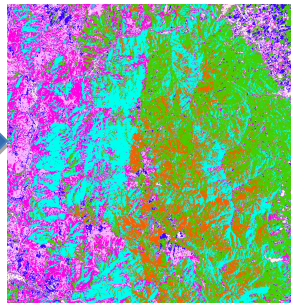
- Extraction of 7 classes of vegetation

Supervised classification
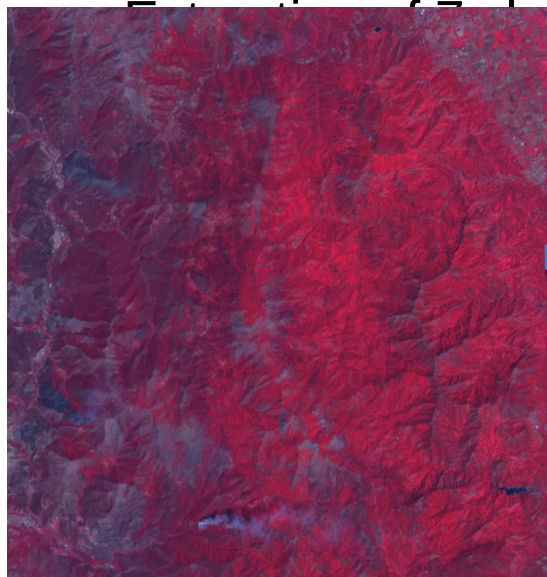
SPOT image 1994. Channels 3,2,1.
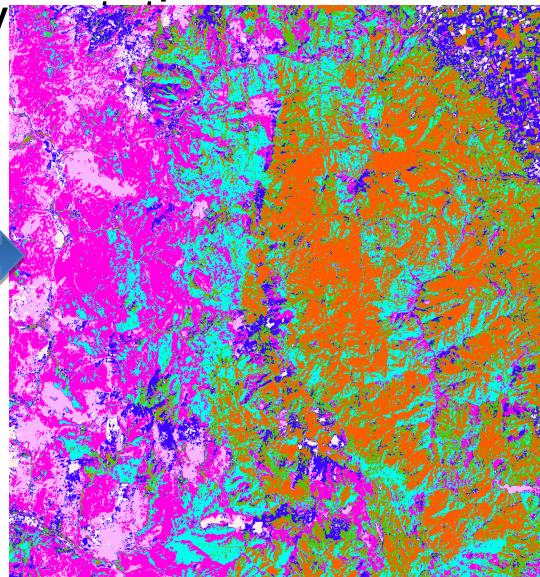
7 classes of vegetation :

bare soil / built

Grass

Cistus

Heather

Forest (beech, holm)

• Chestnut trees

Pines

Vegetation analsysis : results

1994

2012

- The 2 SPOT images are combined with the statistical software R to study the changes of 3 vegetation subclasses :
  - Bare soil / built
  - Low vegetation
  - Forest

Matrix of transition :

No change

Low vegetation to bare soil

Low vegetation to forest

Bare soil to low vegetation

Bare soil to forest

Forest to low vegetation

Forest to bare soil

Use of field survey to assess the Farming location
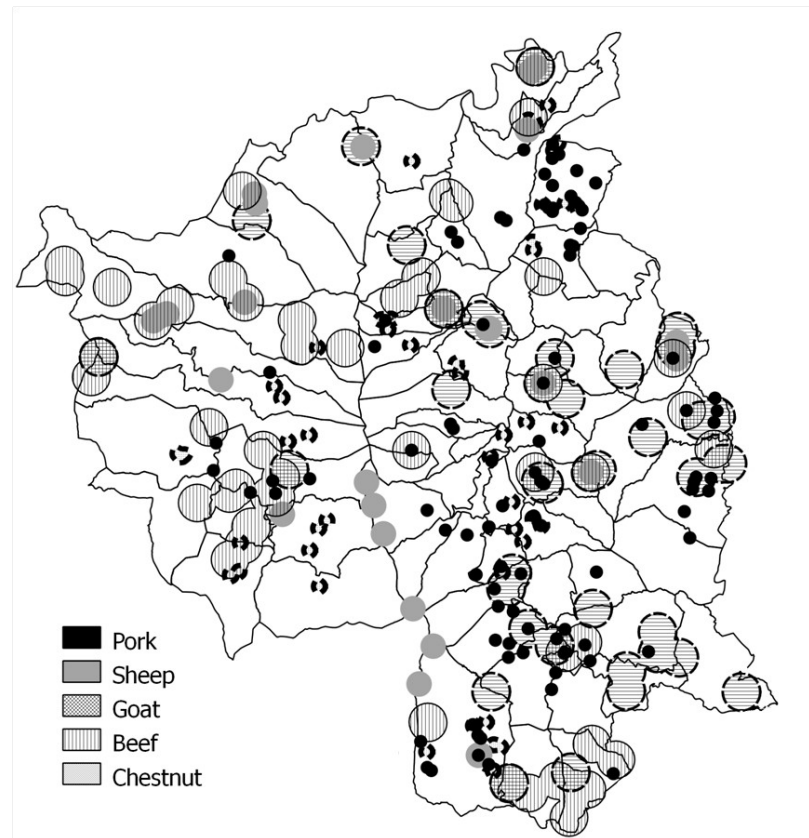
Figure 4   Farming production sites and their surrounding buffer zones (2012)

Claim

Supporting the role of the **C**ommon agricultural policy in **LA**ndscape
valorisation: **I**mproving the knowledge base of the contribution of landscape
Management to the rural economy

Evolution of vegetation growth by farm **type**
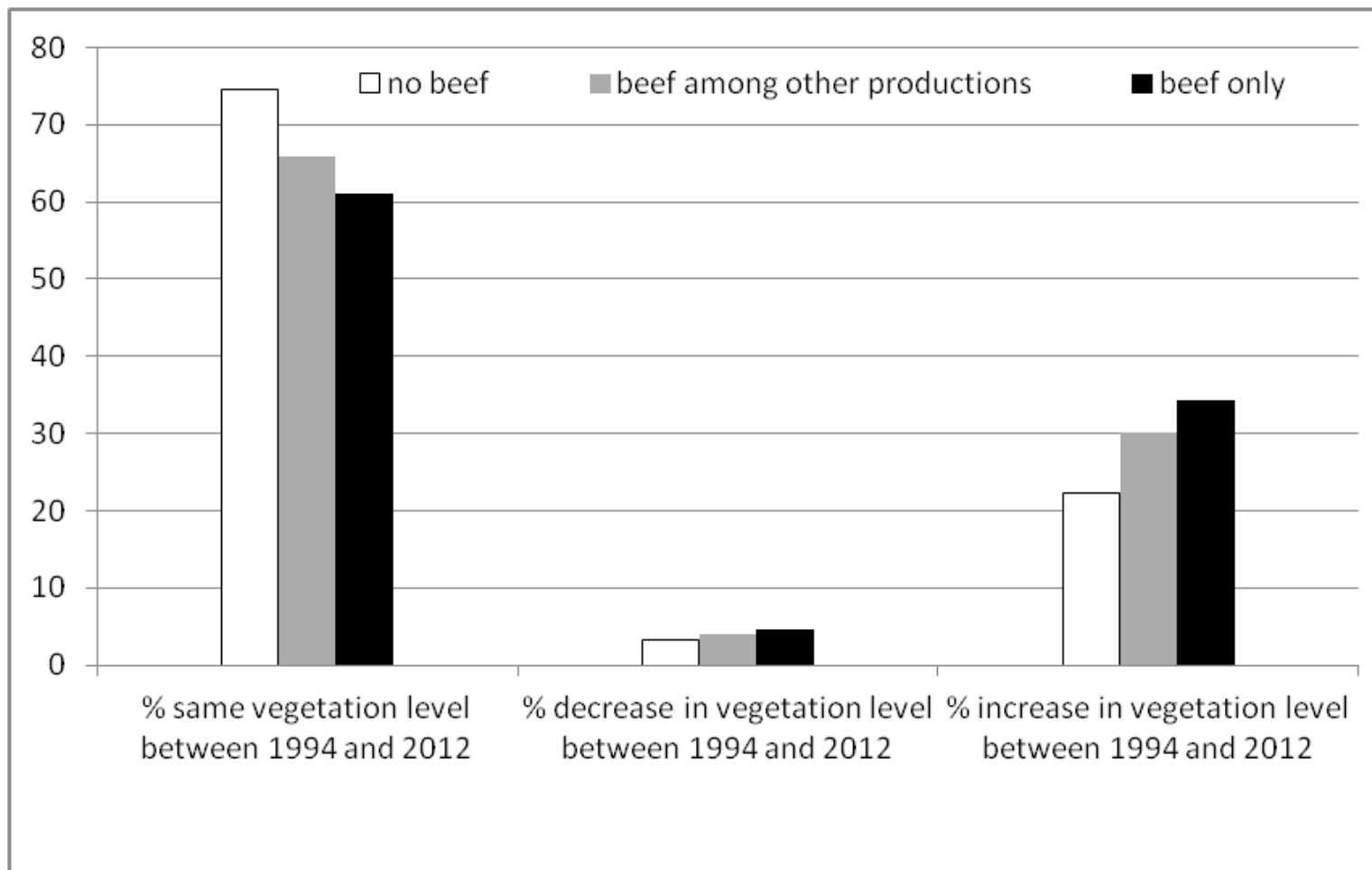
Link between CAP and farming systems?

Original approach: extensification vs intensification vs abandonment.

We estimate a multinomial dependent variable (*Ranch*) describing the production types of each holding with respect to beef cattle production

Estimation results

Coefficients	Intercept	varDexp	vardpop	past1994	Olds
Beef among other productions	-1.276	**-0.549**	0.200	-0.016	0.547
Beef only	-1.655	**-0.967**	**1.326**	**0.406**	**0.734**
Std, Errors					
Beef among other productions	0.218	0.2767889	0.3767932	0.221	0.397
Beef only	0.284	0.3117535	0.4384853	0.230	0.435
> p					
Beef among other productions	5.496 e-09	**0.047**	0.595	0.940	0.169
Beef only	5.626 e-09	**0.001**	**0.002**	**0.077**	**0.091**
Residual Deviance	274.881				
AIC	294.881				

conclusions

The results of the remote sensing data analysis show a rapid process of vegetation growth, from pastures (generally rangelands) to scrublands and scrublands to forest in the Castagniccia region over the last 20 years.

Conclusions 2

results show the Mediterranean ranching systems to be opportunistic, using agricultural land abandonment to maximize personal income together with CAP premiums (despite low agricultural profit).

Conclusions 3

in these Mediterranean areas with low farm density, livestock pressure is too low to control biomass growth. Our results indicate that the current way of distributing premiums without conditions on biomass growth control is questionable.

suggestions

*CAP applications designed in a way as to maintain small systems and make them more attractive for young farmers.

*encouraging the techniques and skills required to maintain and exploit this kind of landscape (generally non-mechanized), instead of merely granting subsidies.

Thank you for your attention

CSA 3 – Castagniccia, France
Lead: INRA LRDE Corte

Name: Pastoral and mountain agriculture

Extent: 45016 Hectare

Location: from 300 to 2700 m uls , steep

slopes, shales
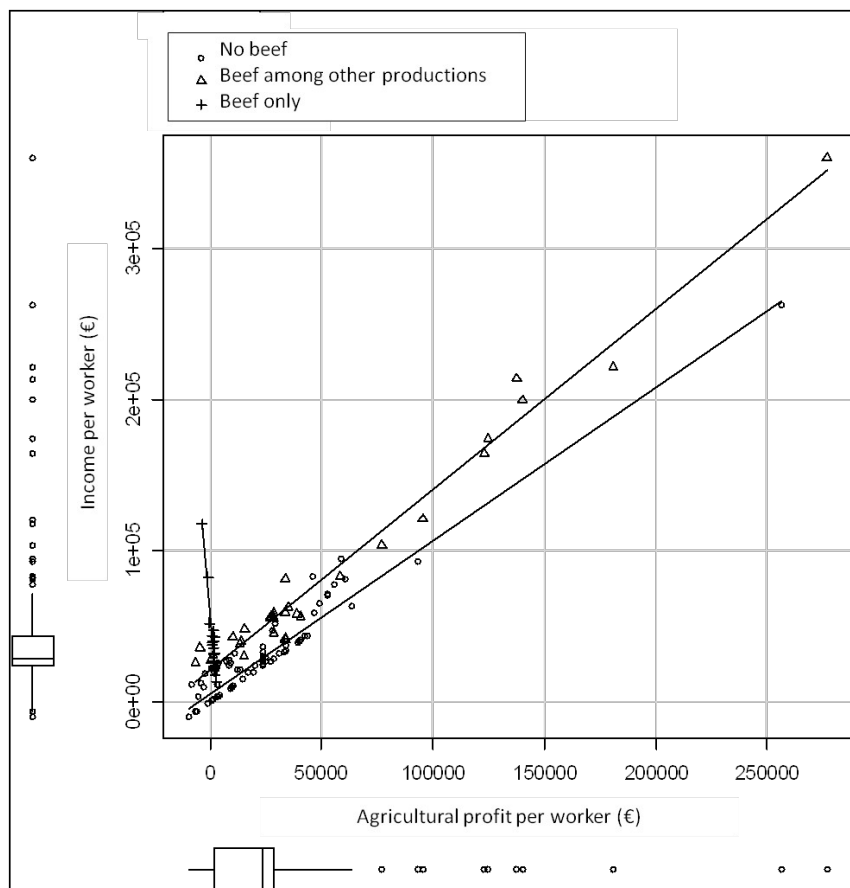
Population : 7050

Climate: Mediterranen

Figure 9: agricultural profit vs personal income per worker