

# Castile-la Mancha, a dissociated crop and sheep farming system

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Farming systems are often a complex elaboration of the human societies they belong to. Untangling the main social and structural constraints may push productivity forward and allow the development of sensible regional policies, without implying environmental costs. In Castile-La Mancha, the third-largest region (some eight million hectares of total agricultural land, TAL) within the European Union, 60 per cent of TAL is under arable cultivation, the rest being natural pasture, shrub-steppe vegetation (*eriales*) and Mediterranean-type forests. Natural resources support a regional flock of some three million Manchega breeding ewes. A typology of the system has been drafted (Caballero, 1999). Our main development strategy is to integrate crop (mainly rain-fed winter cereals) and sheep farming by increasing the forage legume acreage into the crop rotation to meet the forage deficit and to assess the main causes that disincline farmers towards sheep farming. The main sources of information in our research are cultivators, pastoralists and local advisory staff. Our critical objective is the *poligonos de pastos* or grazing polygons, where interests of cultivators and pastoralists may interact. Seasonally-distributed grazing resources (cereal, legumes and sunflower stubbles, fallows, natural pasture, shrub-steppe vegetation and undercover of Mediterranean-type forest) occur in two types of polygons: parcelled polygons with grazing rights compulsorily-allocated to landless pastoralists and segregated polygons, with grazing rights linked to holdings of medium or large size (>150 ha). Integration of crops and sheep farming is judged by two main indicators: the percentage of farmers which operate both cereals and sheep, and the extent of the forage deficit: days that complementary forage legume resources allow the forage gap

to be met (some 180 d) caused by the seasonality of natural resources (Caballero, 1993).

Our descriptive research of the system has been conducted since 1990 within the scope of two EU projects, CAMAR 90/0002 and FAIR 96/1893, and supplementary funds by the Regional Government of Castile-La Mancha. The local advisory staff and local farmers were surveyed in 1990 with a back-up validity analysis in 1997. The observation unit was the municipality, because allocation of the grazing polygons is made at this level. In 1990 and 1997, respectively, 72 and 160 municipalities, of a total of 916, were surveyed, with rates of response of 100 per cent and 95 per cent respectively. Multivariate quantitative analysis provided a definition of several observation groups based on province ( $n = 5$ ), county ( $n = 15$ ), location above sea level ( $n = 3$ ) or main production objectives (milk or meat-oriented). We also conducted in-depth, multi-day telephone and personal interviews with local staff and farmers, which revealed deeper motivations behind farmers' attitudes expressed in qualitative responses. Distribution (skewness), variance, correspondence and principal component analysis, and regression analyses have been performed with the main descriptors (37 variables) of the grazing system.

## Implications

Although a cereal-sheep system is operating, the level of integration is low, with correspondently low economic and ecological efficiencies. On average, only 20 per cent of arable farmers keep sheep and mean available forage-days met by legumes cover only 22 per cent of the estimated forage gap (some 180d).

The main problem in the parcelled polygons, where 80 per

**Table 1.** Indicators of cereal and sheep farming integration in Castile-La Mancha, 1997 ( $n = 152$ ).

| Item   | Parcelled polygons <sup>2</sup> |        | Segregated polygons <sup>3</sup> |        |
|--|---------------------------------|--------|----------------------------------|--------|
| Proportion of total agricultural land <sup>1</sup> (%) | 48                              | (2)    | 31                               | (24)   |
| Proportion of sheep flocks <sup>4</sup> (%)            | 82                              | (23)   | 9                                | (14)   |
| Flock size (No of ewes)                                | 285                             | (130)  | 420                              | (217)  |
| Stocking rate (ewes/ha)                                | 0.93                            | (0.61) | 0.15                             | (0.26) |
| No of landowners per 100 ha of polygons                | 17                              | (9)    | 1                                |        |
| Size of the polygon (ha)                               | 414                             | (216)  | >150                             |        |

<sup>1</sup> The unaccounted 21 per cent is arable land of non-grazing use (vineyards, olives and irrigated land).

<sup>2</sup> Allocated to one land-less pastoralist paying a grazing fee.

<sup>3</sup> Grazing rights linked to land property.

<sup>4</sup> The unaccounted 9 per cent are sheep farmers operating in owned plus rented land. In parenthesis, SD.

**Table 2.** Rating of possible constraints to cereal-sheep integration in Castile-La Mancha, 1997 (n = 139)<sup>1,2,3</sup>

|   |      |        |
|---|------|--------|
| 1. There is scarcity of forage resources  | 0.35 | (0.21) |
| 2. Increase of forage resources is difficult                                      | 0.41 | (0.21) |
| 3. Sheep farming represents a hard-working operation                              | 0.75 | (0.17) |
| 5. Farmers are unwilling to share neighbouring farms to maintain a sizeable flock | 0.70 | (0.20) |
| 6. There is a scarcity of professional shepherds                                  | 0.79 | (0.17) |
| 7. Mixed cereal-sheep farming is uncongenial                                      | 0.17 | (0.16) |
| 8. Tradition in the sheep operation is lacking                                    | 0.14 | (0.17) |
| 9. Young farmers reject current sheep farming methods                             | 0.89 | (0.14) |
| 10. Technical support is lacking  | 0.32 | (0.18) |

<sup>1</sup> Constraints rated from 0 (least important) to 1 (most important).

<sup>2</sup> A sample of local advisory staff from 139 municipalities.

<sup>3</sup> In parenthesis, SD.

cent of landless sheep producers are concentrated, is the lack of grazing infrastructure. The nature of the land resources and the ownership regime result in extensive systems, occupying large unfenced areas in relation to the size of the business. The main problem in the segregated polygons is lack of interest by the owner in the sheep operation, as related to other operations that are less hard work and more highly subsidised (cereal, fallow and afforestation) (Table 1). Young farmers tend to be disinclined to become involved in the sheep sector due to the lack of confidence and low social status, even within their own communities, of this labour-intensive operation (Table 2).

Market inefficiencies in the allocation of grazing resources (compulsory grazing rights to landless pastoralists and fixed grazing fees) generate contradictory interests to prevent co-operation between cultivators and pastoralists. There is a need to understand regional agriculture systems before we can hope to achieve successful agricultural policy.

#### References

- Caballero, R. (1993) *Journal of Sustainable Agriculture* 3: 133-154  
 Caballero, R. (1999) *Agric. Syst.* (in review).