

## Evolution of the production systems of the endangered cattle breed Mirandesa: Threats and alternatives for family-farm systems.

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### INTRODUCTION

Family-farm systems are largely dominant in the rural communities of northeastern Portugal. These systems can be organized based on the interrelations and the diversity of its characteristics such as farmer's age, farm dimension, external incomes, productive orientation, or livestock type and number (1).

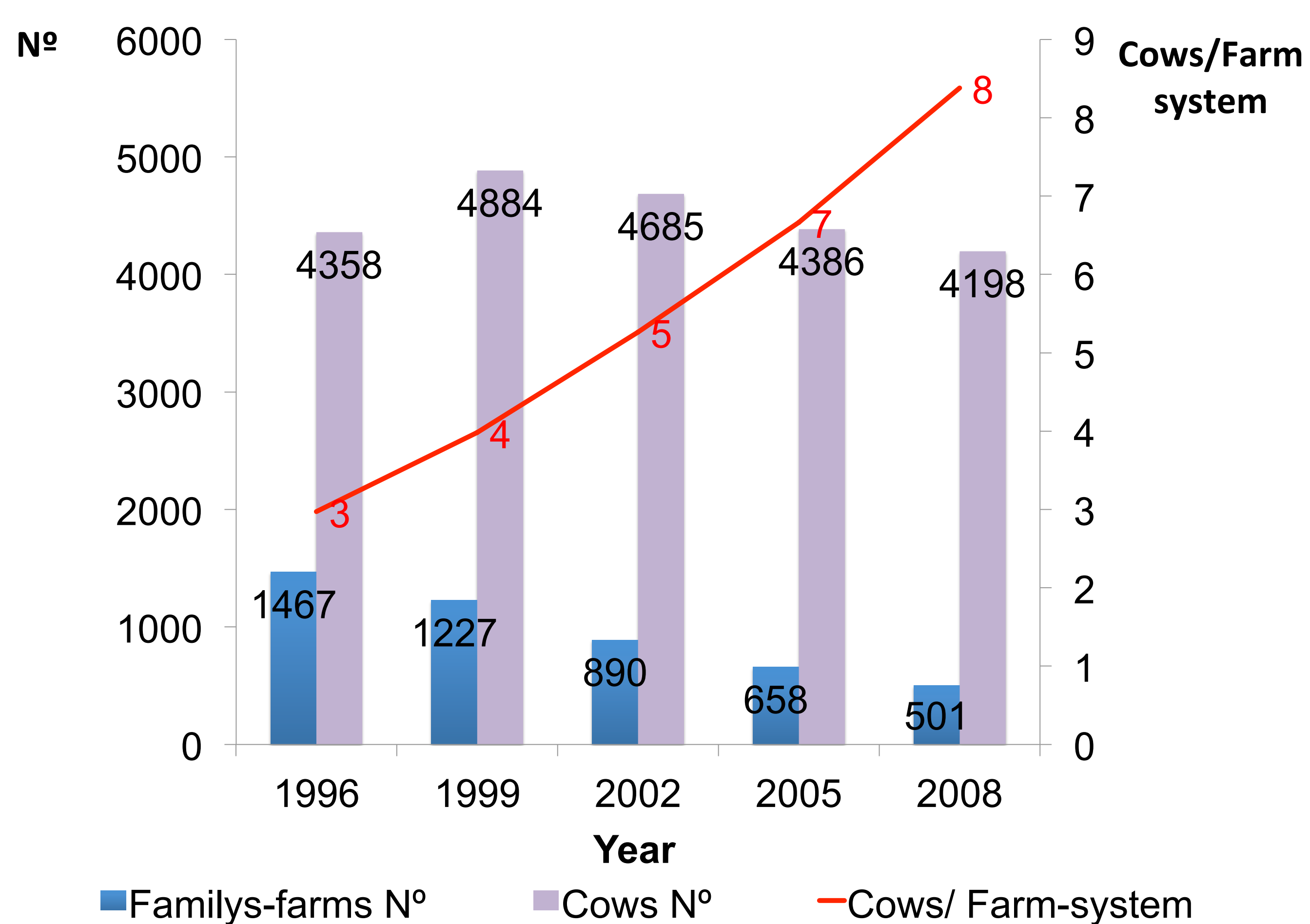
A significant number of the regional family-farm systems raise Mirandesa cows, a local cattle breed classified as endangered in 1994. Since 1995 the Mirandesa veal enjoys a Protected Designation of Origin (PDO). The carcasses of weaning calves, that aren't PDO, are currently paid 4 €/kg. The PDO producers receive 5,25€/Kg, a 31% higher premium price. Since 1998, a producers group guarantees the sale of all production. In the last decade, the national inflation average was 2.45%; the group achieved a gross margin on the sale price, on average, 1% above inflation. However, despite the commercial success of the PDO, the Mirandesa cow and the farmers numbers continues to decline.

### MATERIAL AND METHODS

The study of demographic census of the family-farm systems and cows in the period 1996 - 2008. The case studies of 10 family-farms, representing the diversity of regional family-farm systems (1)(2), during the period 2006-2010. The case studies included: UAA and the prices evolution of the production factors with more impact in the intermediate consumption of the PDO Mirandesa meat production system.

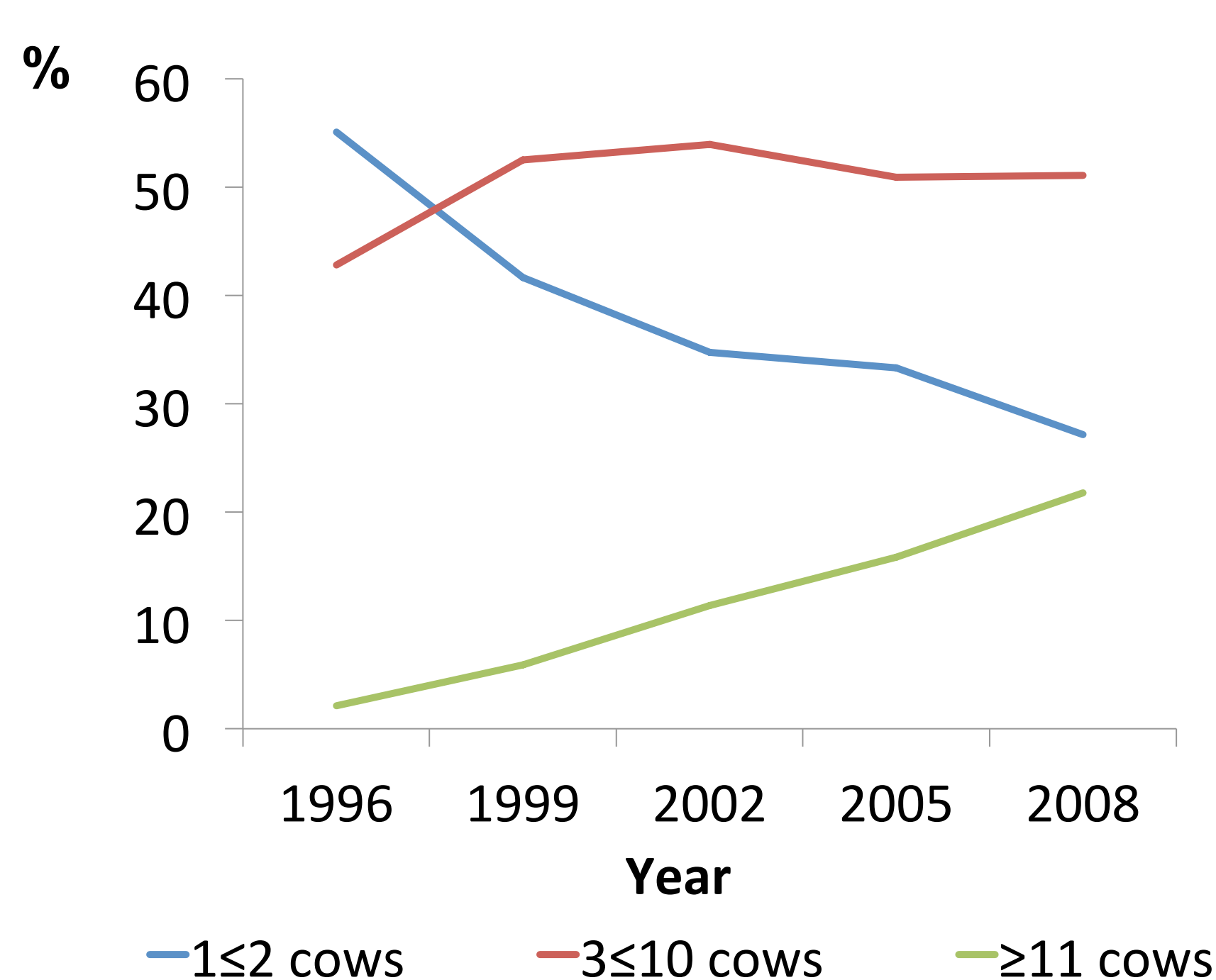
### RESULTS AND DISCUSSION

In the past 15 years, despite the success of the PDO Mirandesa, the farm numbers decreased 64%, and the breeding cows numbers decreased 3.7% (Fig. 1).

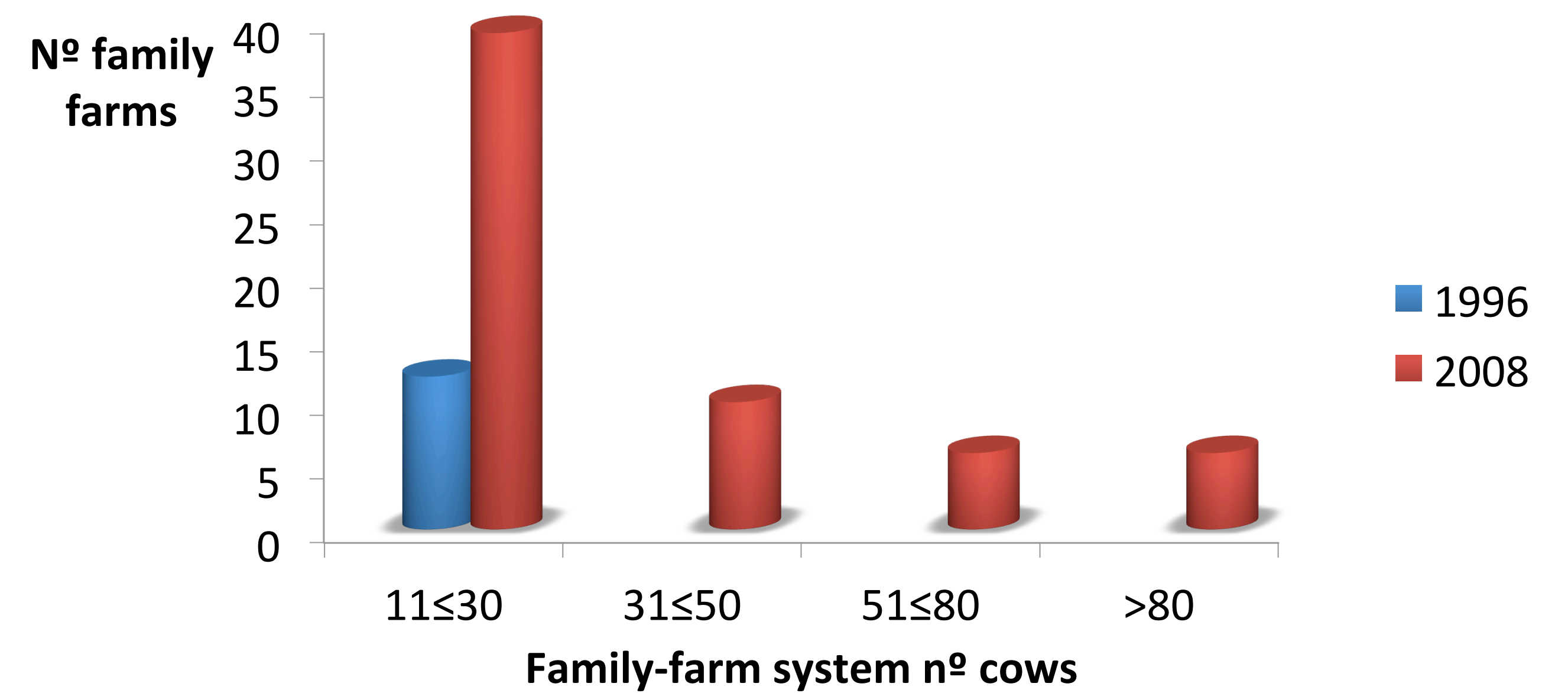


**Fig. 1** - Evolution of the number of family-farm systems and their livestock.

The most stable systems were more similar to the traditional production mode, with 3-10 cows per farm. On these farms the calf gross margin was, in 1999, 50% higher than in more specialized farms (>10 cows)(3). However, the family-farm systems with more than 10 cows were those that grew the most (Fig. 2,3).



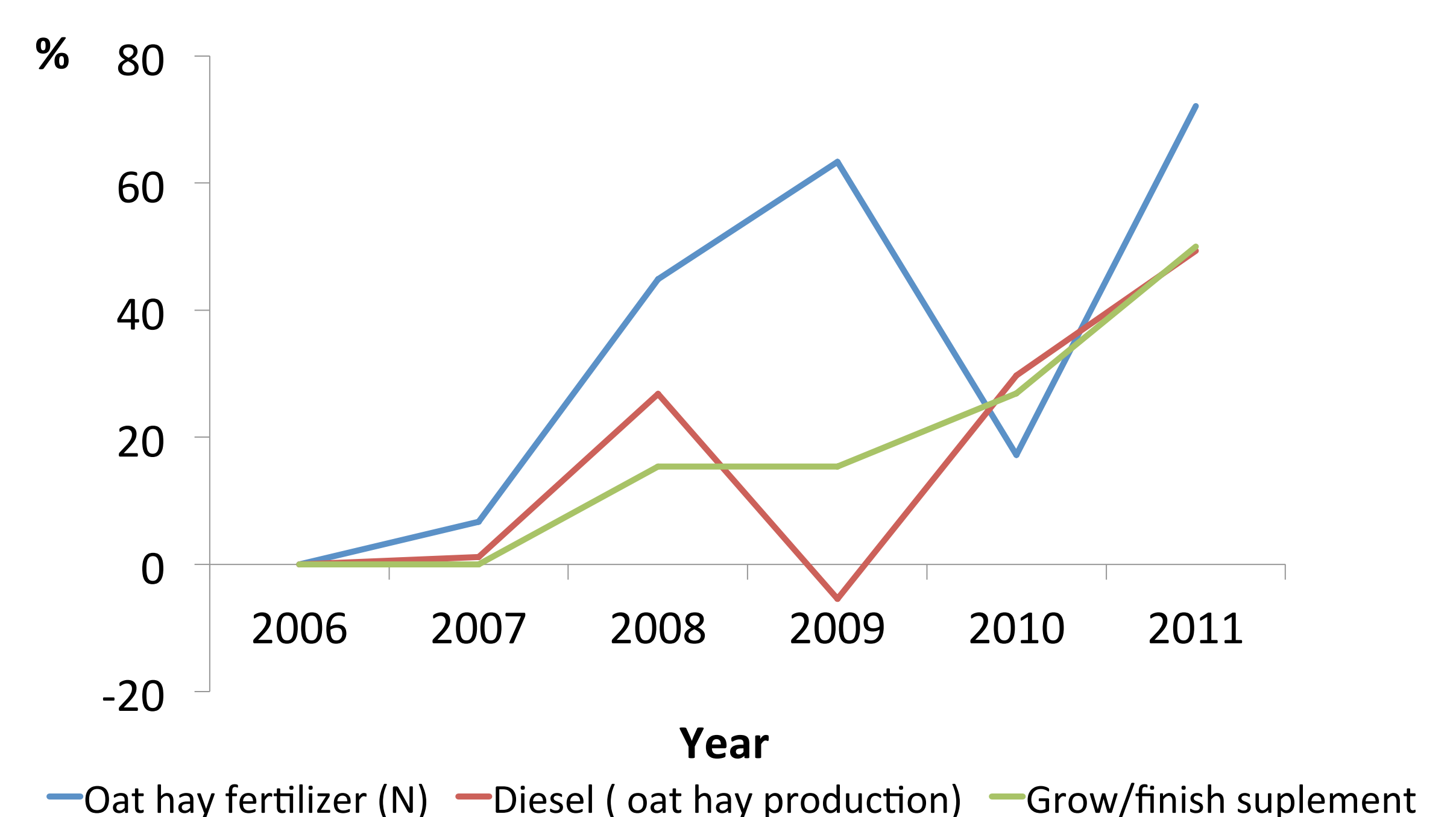
**Fig. 2** - Evolution of family-farm systems in function of the number of own cows.



**Fig. 3** – Evolution of the number of cows per family-farm system in the classes with more cows (>10) between 1996 and 2008.

The PDO success, associated with the lost of competitiveness of cereal production, in the years of 1994-1995, provided an opportunity to increase the stocking rates, and to promote a specialization in beef production, backed on oat forage. The stocking rates progressed from 0.3-0.5LSU/ha to 1.5-2LSU/ha. Nowadays the area of oats for forage represents 30% of the UAA. In the same period, few producers installed sown pastureland; they currently don't represent more than 3% of the UAA. The explanation for the low use of permanent sown pastureland is related with the average size of land plots formerly cultivated with cereals (<1 ha), which difficult their use in rotational stocking systems. In more intensive farms, the number of grazing days per cows was small, and there were even two cases where the cows were housed permanently.

A strong dependence on annual forages weakens economically the farms, because the external inputs are much more expressive and dependent on fossil energy (fuels, nitrogen fertilizers and feed supplements). In the period 2006 to 2011, there was a price increase of 71% in fertilizers, 50% diesel and 49% in feed supplements (Fig. 4).



**Fig. 4** – Price evolution of the major intermediate consumptions of the studied production system.

Many intensive farms ended recently its activity, or uncertainty overshadows its future, because the producers don't have enough land to support larger herds (> 20 cows) to assure the family income.

### CONCLUSIONS

Annual forage production will tend to disappear because its intermediate costs are strongly correlated with fuel prices. The future competitiveness of the regional family-farm systems, among other options, depends: 1) on the conversion of oats cultivated areas into permanent pastureland and; 2) higher cooperation/integration at family-farm level with the development of common permanent pastureland.

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