Evolution of Research on Mulberry as Cattle and Sheep Feed in Central Italy

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The author was a former student of Tropical and Subtropical Rangeland Management at the University of Florence where most of the summarized work was conducted.

Studies on the use of shrubs to overcome the summer gap of forage availability in Central Italy started at mid of the 80's with comparisons among different species in artificial plantations. In all trials carried out in different sites, 14 shrub species were compared. These species were some of the ones commonly used in traditional animal rearing (*Acer campestre, Almus cordata, Corylus avellana, Fraxinus ornus, Morus alba, Ostrya carpiunifolia, Robinia pseudacacia, Ulmus carpinifolia, Vitis rupestris, Medicago arborea, Coronilla emerus*) and new introductions (*Acer negundo, Amorpha fruticosa*).

Native *Morus alba* was included in all the trials (Pardini, 1990; Talamucci *et al.*, 1990).

Characteristics considered were rapidity and rate of establishment, growth rate, productivity, effects of cutting heights, chemical composition and palatability. Most of the results were published on specialised journals.

Acer negundo, Amorpha fruticosa, Morus alba and *Robinia pseudcacia* resulted to be the most productive and had the highest protein contents. Morus alba was preferred to the first two species due to better palatability. Work on *Robinia pseudacacia* was stopped due to its excessive amount of thorns, although the variety tested was a Greek selection with reduced spines.

Promising results encouraged the repetition of some of the trial focusing on a selected cultivar of mulberry. The Japanese variety "Kokuso" was chosen because of its higher productivity (Talamucci and Pardini, 1993; Argenti *et al.*, 1999). However *Acer negundo* was also kept for further studies in one of the trials (Pardini, 1991). It was then abandoned because, nonetheless its high productivity, since it did not showed good palatability and a high proportion of its leaves fell during the last part of the driest summers.

Once mulberry was chosen as the most promising species for the sited studied, the search for its possible integration in various grazing systems started.

None species of shrubs can be considered as the only feed source for animals. Pastures composed of different species of grasses and legumes have proved to be much more productive. Thus, shrubs are considered "strategic" plants to be used just in the critic seasons.

The use of mulberry was then considered in different rotations with other resources (Pardini and Rossini, 1997; Talamucci *et al.*, 1996; Talamucci and Pardini, 1999).

This stage of the research on the integration of the individual shrubby and herbaceous species into organised pastoral system has been co-ordinated also at an interregional level by the FAO/CIHEAM network on "Mediterranean pastoral system" with participation of mostly scientists from Europe, Middle East and North Africa and some from Mediterranean areas of other continents.

This network includes a project on "Forage and grazing systems", that co-ordinates some of activities developed a national level (Argenti et al., 1999). The recent trend of the Italian research, deriving from the studies on the integration of different resources in complex pastoral systems, is now concerned with the

diversification of land use and multi-functionality of the territory. Due to recent modification in the Italian agriculture, the more traditional farms are somehow becoming a support to new emerging economic sectors like eco-tourism and tourism in natural reserve areas (Piano and Talamucci, 1996).

Under this new perspective, forage resource productivity has become secondary to extra-productive functions (like protection of the territory, including landscape beauty and the sustainability of production). These are receiving major attention in large areas of the Italy as well as in other southern European Countries.

Mulberry, as well as other shrubby species, might play an important role in maintaining resource variety and, in turn, contribute to land use diversification.

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