ANALYSIS OF A SILVOPASTORAL SYSTEM WITH ANIMALS OF THE AUTOCHTHONOUS SWINE BREED PORCO CELTA IN GALICIA (NW SPAIN)

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INTRODUCTION

Pig traditional production systems in Galicia (NW Spain) are based on seasonal resources such as chestnut and pastures. The Breeders' Association of the autochthonous Celtic breed of pigs (ASOPORCEL 2014) has developed a novel system within the traditional Galicia grazed forest areas in order to preserve landscape quality and biologic diversity, minimizing therefore the environmental impact of pig production. Galicia is the region of Europe with the highest number and hectares of land burnt in wildfires. The main tree species of Galician forest is Pinus pinaster, which has a high fire risk. Mechanical clearance of this forest is really expensive and usually not carried out. Understory is usually of low quality but could help to reduce feeding cost of pigs. One of the main concerns of silvopastoral system implementation is the need of fencing. Fencing costs could be reduced if animals are reared with infrastructures based on Pavlov animal condition reflex management (alarm system) in an extensive system. Therefore, cost reduction is obtained thanks to the clear reduction of personnel needs to feed animals, fencing costs and understorey clearance to reduce forest fires.

OBJECTIVE

This study aims at testing the effect of pigs rearing with an alarm based on Pavlov animal condition reflex on the understory surrounding this infrastructure and on animal live weight.

MATERIAL

In 2013, an experiment was carried out in Nebra (NW of Spain) in a young Pinus pinaster plantation. Pig stocking rate was around 3.85 pigs per ha (25 males and 25 females) in a total surface area of 13 ha. Forest grazing program was initiated when animals were three months old in March 2013 and finished in December 2013. Animals were allowed to access the whole plot. Concentrate was provided twice every day after sounding an alarm to attract pigs. The alarm system has the patent number P201131720. All the animals adapted rapidly to the alarm system. Vegetation was evaluated by the use of transects placed at increasing distances from the "alarm" system. We performed 6 transects of 20 meters at each of the three distance ranges considered, and point contacts were measured every 5 meters. Vegetation was determined in each contact point and height measured before and after grazing in the same month in order to avoid vegetation phenological state bias. Animals were weighed monthly. Statistics were carried out using SAS (2001).

Installations

Apart from the closing perimetral of the total surface of 12,84 Has., the rest of the installations are made concreted in:
- Sanitary ford in the access to the instalation in its principal and only entry for the access of personnel and vehicles.
- System of supply, security and capture. In the South of farm/ranch structure of interior closing of 32 x 16 m of surface is located which has functions of refuge, place of supply and zone of capture for the cattle, with the following characteristics:
- Closing mesh of 1,50 meters height
- Covered Zone
- Two doors, one of them destined for the possible access of the personnel to the interior and another door of metal of 1,60 meters width destined to the access of the cattle. This second door has an automated and programmable system of opening.
- System of contribution of complementary supply that consists of 5 feeding-places of galvanized steel of 10 positions with dividers, which are fed by Automated Dispensers of Fodder, fed at the same time by a pipeline with an auger that will transport the food from an exterior silo.
- System of Water contribution. It consists of drinking-troughs like nipple placed in the system of interior closing. They are fed from a water tank placed together with the principal entry of the closing perimeter of the plot.
-System of Generation of Energy. In order to make work the systems and automatisms, there has been designed a system of generation of electric power by Photovoltaic Panels

RESULTS

Vegetation height (Figure 1) was affected in the two first distance ranges measured (from 0-120m and from 120-240 m), indicating that pigs did not go further than 240 m from the alarm system. An increase of pig growth was found along the study, however restrictions in the vegetation during the summer limited the growth rate (Table 1). Proximity to the "alarm system" created a gradient in the different understory vegetation. Bare soil was clearly increased by a 13% in the first (from 0 to 120 m) and the second (120 to 240 m) distance ranges (Figure 2). The main change in the understory dealt with Erica, which was clearly reduced in the first and second distance ranges after grazing when compared with vegetation before grazing.
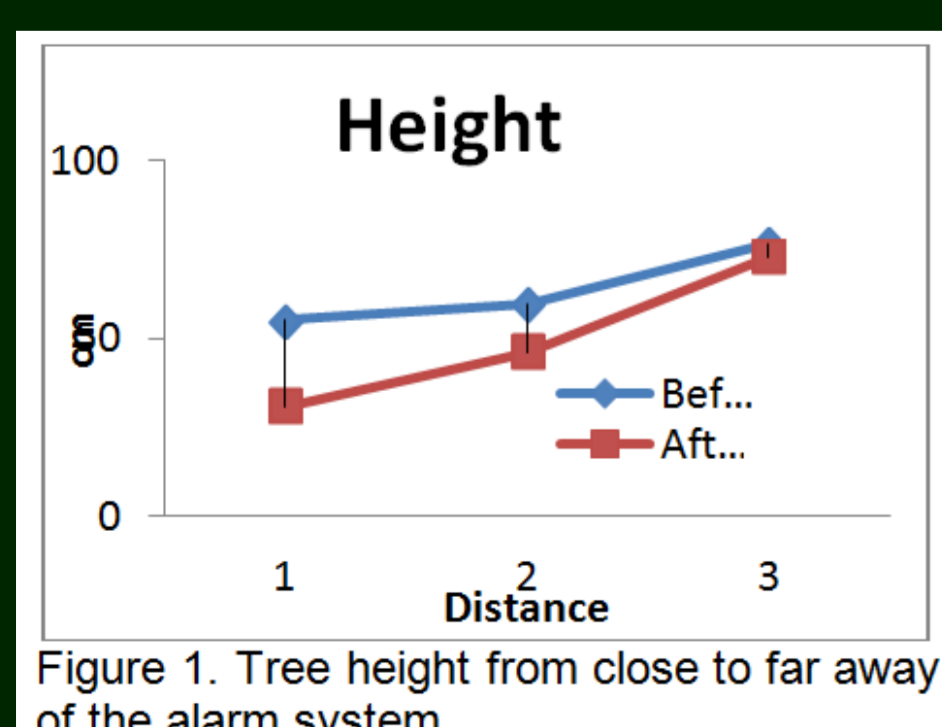

Figure 1. Tree height from close to far away of the alarm system

	Month (Ap-My)	Month (My-Jn)	Month (Jn-Jl)	Month (Jl-Ag)	Month (Ag-Sp)	Month (Sp-Oc)	Month (Oc-Nv)	Month (Nv-Dc)
Initial weight Mean ± sd (kg)	34±12,26	43±12,74	51±12,38	63±11,40	73±2,19	89±11,41	94±11,33	105±12,33
Final weight Mean ± sd (Kg)	431±2,74	51±12,38	63±11,40	73±12,19	89±11,41	94±11,33	105±12,33	117±12,97
Average Daily Gain (ADG) Mean ± sd (g)	290±70	260±70	390±180	350±160	520±110	170±90	340±100	390±70

Table 1. Montlhy weight mean gain of pigs during the experiment.
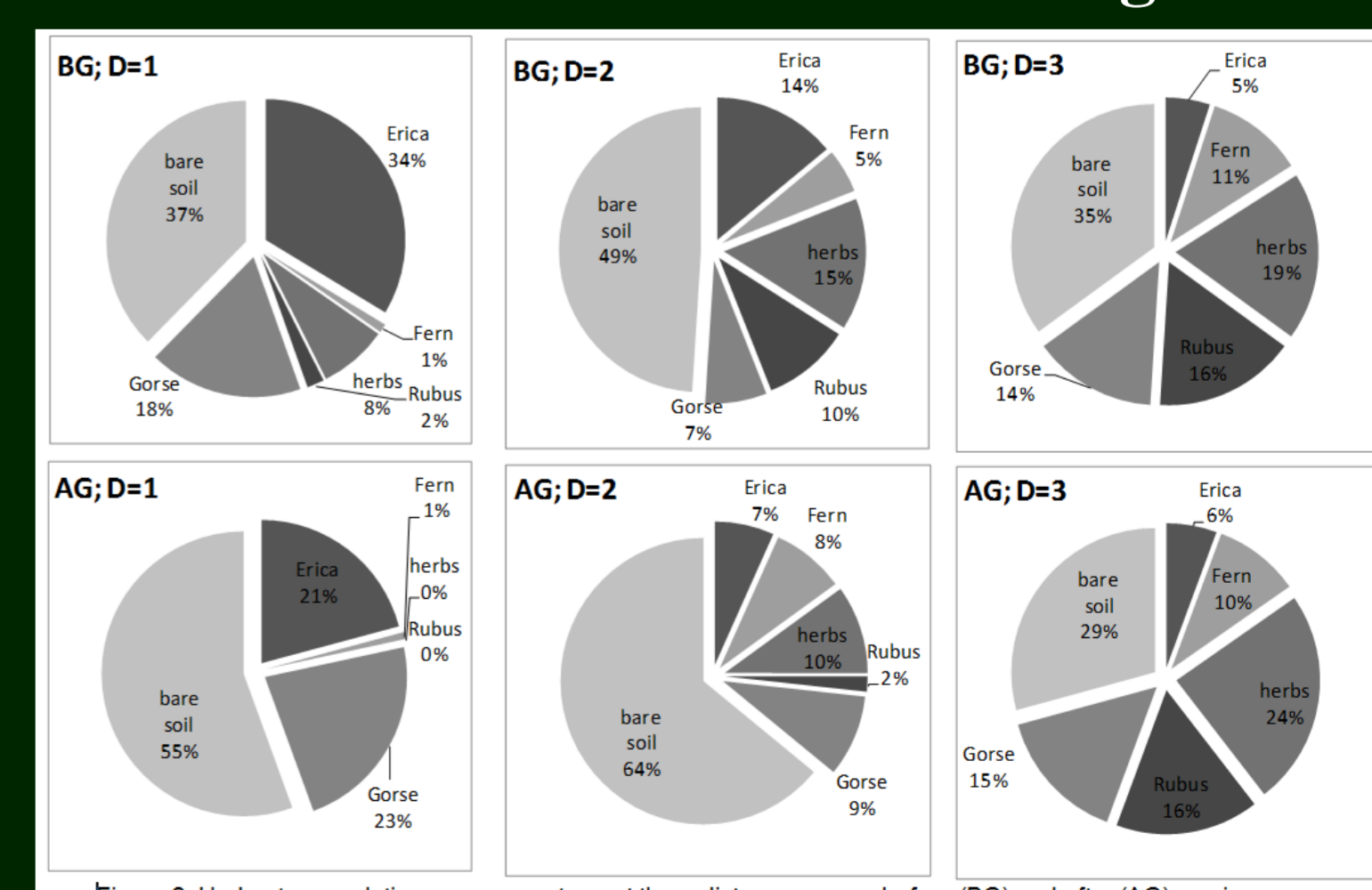

Figure 2. Understory evolution as a percentage at three distance ranges before (BG) and after (AG) grazing.

DISCUSSION

Pigs adapted well to the alarm system and modified surrounding understory until 240 meters. Bare soil was increased as found in areas with pig grazing under chestnut trees (*Santiago-Freijanes et al.* 2011). The alarm system should be moved more frequently in order to reduce the bare soil in its surrounding areas

References

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