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Measuring farm resilience attributes: The study of three small ruminant systems

A. Prat-Benhamou[1,2], M. Meuwissen[3], T. Slijper[4], A. Bernués[1,2], P. Gaspar-García[5], J. Lizarralde[6], J. Mancilla-Leytón[7], N. Mandaluniz[6], Y. Mena[7], B. Soriano[8], D. Martín-Collado[1,2]

[1] Agrifood Research and Technology Center of Aragon, Avda/ Montañana 930, 50059 Zaragoza, Spain, [2] Agri-Food Institute of Aragon, C/ Miguel Servet 177, 50013 Zaragoza, Spain, [3] Wageningen University and Research, Hollandseweg 1, 6706KN Wageningen, Netherlands, [4] Swedish University of Agricultural Sciences, Ulls väg 27, 756 51 Ultuna, Sweden, [5] Universidad de Extremadura, Avda/ Adolfo Suárez s/n, 06007 Badajoz, Spain, [6] NEIKER- Instituto Vasco de Investigación y Desarrollo Agrario, Basque Research and Technology Alliance (BRTA), N-104, km 355, 01192 Arkaute, Spain, [7] Universidad de Sevilla, Ctra. de Utreta, km 1, 41005 Sevilla, Spain, [8] Universidad Politécnica de Madrid- CEIGRAM, C/ Senda del rey 13, 28040 Madrid, Spain

Agricultural systems need to be resilient to cope with challenges. Usually, resilience assessments do not focus on the system characteristics that contribute to building resilience, i.e. the resilience attributes. This is partly due to a lack of operational approaches to measure them. The aim of our research is to operationalise the measure of farm attributes. We considered 21 resilience attributes and developed 85 proxy indicators to measure attributes at the farm level. We applied the approach to three Spanish case studies: (i) meat sheep, (ii) dairy sheep, and (iii) dairy goats. Data were collected though 3 focus groups with local experts to assess the importance of the attributes in the case studies and through 144 surveys to farmers to measure the indicators. Based on these data, we calculated an overall resilience score. The scores obtained ranged from 25 to 75 out of a maximum score of 100. We found some strengths and weaknesses of each case study. Our research provides a tool that can be used by policy makers, farmers, banks, and other stakeholders to assess the status of resilience attributes and where improvement is possible.

How resilience attributes contribute to specific resilience at farm level? The case of small ruminants in Spain

J. Lizarralde[1], B. Soriano[2], L. Yanore[3], P. Gaspar-García[4], A. Prat-Benhamou[5], R. Ruiz[1], J. M. Mancilla-Leytón[6], Y. Mena[6], D. Martín-Collado[5], R. Ripoll-Bosch[3], N. Mandaluniz[1]

[1] NEIKER-Instituto Vasco de Investigación y Desarrollo Agrario, Basque Research and Technology Alliance (BRTA), N-104, km 355, 01192 Vitoria-Gasteiz, Spain, [2] Universidad Politécnica de Madrid- CEIGRAM, C/ Senda del rey 13, 28040 Madrid, Spain, [3] Animal Production System Group, Wageningen University Research (WUR), Droevendaalsesteeg 4, 6708 PB Wageningen, Netherlands, [4] Universidad de Extremadura, Avda/ Adolfo Suárez s/n, 8, 06007 Badajoz, Spain, [5] Agrifood Research and Technology Center of Aragon, Avda/ Montañana 930, 50059 Zaragoza, Spain, [6] Universidad de Sevilla, Ctra. de Utreta, 10 km 1, 41005 Sevilla, Spain

The small ruminants farming systems (SRFS) with local breeds in Spain are in decline due to the challenges they face. The resilience attributes could help SRFS coping with these challenges. The aim of this work was to analyse how resilience attributes (n=21) modulate resilience to specific challenges (n=7) at farm level, as perceived by farmers. To this end, 144 farmers were surveyed in three case studies (dairy goat, dairy sheep, and meat sheep) in Spain. The survey enquired about the perceived resilience and the effect of challenge in a Lickert scale (1-7). In addition, resilience attributes score was developed based on indicators of farm characteristics and relations. Thus, an ordinal logistic regression was performed to analyse which resilience attributes would explain the farm' specific resilience to each challenge. Results show the effect of the challenge vary between cases. The most significant attributes are the family support and the exposition to disturbance in the dairy goat; family support, organization of the sector and the financial capital in dairy sheep; and time-space heterogeneity and functional diversity in meat sheep. Although, there are common points between cases, results show that depending on the case and the challenge resilience attributes influence differently the perceived specific resilience. These findings underscore it is necessary to understand the characteristics and structuration of livestock systems to identify areas requiring looking at for greater resilience.