

Evaluation of seed harvesting methods on "hay meadows" (Arrhenatherion and Trisetion communities) in the Iberian Peninsula.

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SER2018 Restoration in the Era of Climate Change

Introduction

SOS PRADERAS (*Looking backwards to reach the future: modernisation of traditional handling of hay meadow towards profitability and nature conservation*) is a project developed under the INTERREG SUDOE PROGRAMME, an initiative promoting transnational cooperation with the aim of solving common problems around the South-western European region.

Hay meadows are agroecosystems maintained by the secular action of man. Their great botanical and faunal value has been widely recognized and included among the main habitats to be protected in Europe through the Habitats Directive with codes 6510 (Arrhenatherion) and 6520 (Trisetion-Polygonum bistortae). However, they are in the process of disappearing in the Iberian Peninsula due to agricultural intensification and abandonment.

Main Objectives

SOS PRADERAS aims to promote sustained management of hay meadows to promote its conservation. The project seeks to stop the loss of associated biodiversity through its assessment, adequate management and restoration, the application of agri-environmental subsidies and the marketing of new products (seed mixtures).

Among other measures, seed harvest trials were carried out during summer of 2017 and 2018 on plots located in Community Interest Sites in France and Spain.

Material & Methods

LOCATIONS	3	2 SPAIN (OMANA, PNPE)	1 FRANCE (PNP)
HARVEST METHODS	6	2 NON-CONSERVATIVES	4 CONSERVATIVES
HARVEST DATES	2	1 BEGINNING JULY	1 END JULY

2017 ONLINE METHODS							
	METHOD	LOCATION	SURFACE (m ²)	DATES	SAMPLE	COMPOSITION	
						Proceca	Fabaceas
A	Seed suction from the ground after hay harvest	PNPE/OMANA (Spain)	72/72	1st week July	Murias	0	20
					Tombó	0	12,5
B	Seed harvest during hay packing	PNPE/OMANA (Spain)	250/237	1st week July	Murias	21,4	14,3
					Tombó	0	0
C	Hand sweeper before hay harvest	PNPE/OMANA (Spain)	187/238	1st week July	Murias	28,6	7,1
				4rd week July	Murias	0	7,7
				1st week July	Tombó	22,7	9,1
				4rd week July	Tombó	12,5	12,5

2017 AD HOC METHODS							
	METHOD	LOCATION	SURFACE (m ²)	DATES	COMPOSITION		
					Poaceae	Fabaceae	Others
D	Green hay harvest	PNP (France)	13,5	2nd week July	88,7	6,7	4,6
E	Threshing with combine machine	PNPM (France)	991	2nd week July	94,8	4,6	0,6
F	Seed stripping with a pull type	PNPM (France)	12000	2nd week July	93,5	5,3	1,2

2018 AD HOC METHODS							
	METHOD	LOCATION	SURFACE (m²)	DATES	COMPOSITION		
					Poaceae	Fabaceae	Others
D	Green hay harvest	PNO (Spain)	1085	4rd week July	27,3	27,3	45,5
E	Threshing with combine machine	PNO (Spain)	1098	4rd week July	25	33,3	41,7
F	Seed stripping with a hand type seed stripper	PNO (Spain)	1017	4rd week July	35,7	21,4	42,9

Area Map



SOS PRADERAS Partners

- Universidad de Oviedo
- Consorcio Parque Natural Picos de Europa
- Instituto Politécnico de Bragança
- Instituto Nacional de Investigação Agrária e Veterinária
- Conservatoire botanique pyrénéen
- Semillas Silvestres S.L.
- Diputación General de Aragón

Results

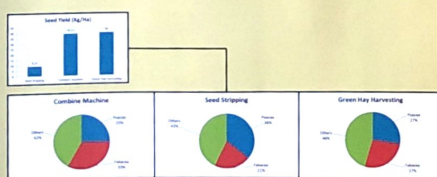
· Online methods (soil suction after hay harvest, seed harvest during hay baling and hand sweeping before hay harvesting) produce small seed yield compared with ad hoc harvest methods (hay harvesting, combine machine and sweeper machine).

· The harvest date influences the seed yield and seed mix composition. Harvesting on the first date increases the amount of seeds of the Poaceae family, but reduces the seed yield.

· The vegetative development, rain precipitation and the floral composition on each donor site are very related to the seed yield and final seed mix composition.

· The three harvest methods tested on the summer of 2018 show a good specific richness and although Poa-

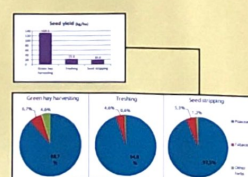
Ad Hoc Methods 2018



Online Methods 2017



Ad Hoc Methods 2017



Packagings

Besides hay meadow seed production research, this project aim to develop a packing prototype to offer the seed mixes produced to gardeners, land restaurators, farmers and not professional seed users. These are the 3 options presented, from which one will be chosen and further developed:



Acknowledgements & References

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Conclusions

· The seed yield and seed composition are very depend- ing of the donor site. Floral composition and vegetation development are critical to get enough amount of hay meadow representative seed mix.

· Green harvest and combine machine methods show the better results in term of seed yield, while green hay harvesting requires an important and expensive seed processing.

· Seed stripping pull type harvest produces less amount of seeds than other harvest seed methods.

Its implementation is difficult due to long stem grasses methods.

· The three methods tested on 2018 on a larger scale demonstrate that a certain amount of seeds representative of the hay meadow can be harvested. However the production costs, due to the big biomass volumes or the use of heavy machinery could make unfeasible to produce meadow seed mixes at reasonable price.

· These results drive us to reach an agreement with farmers to choose the better meadows in terms of floral composition, biomass and accesibility to develop a feasible harvest process.