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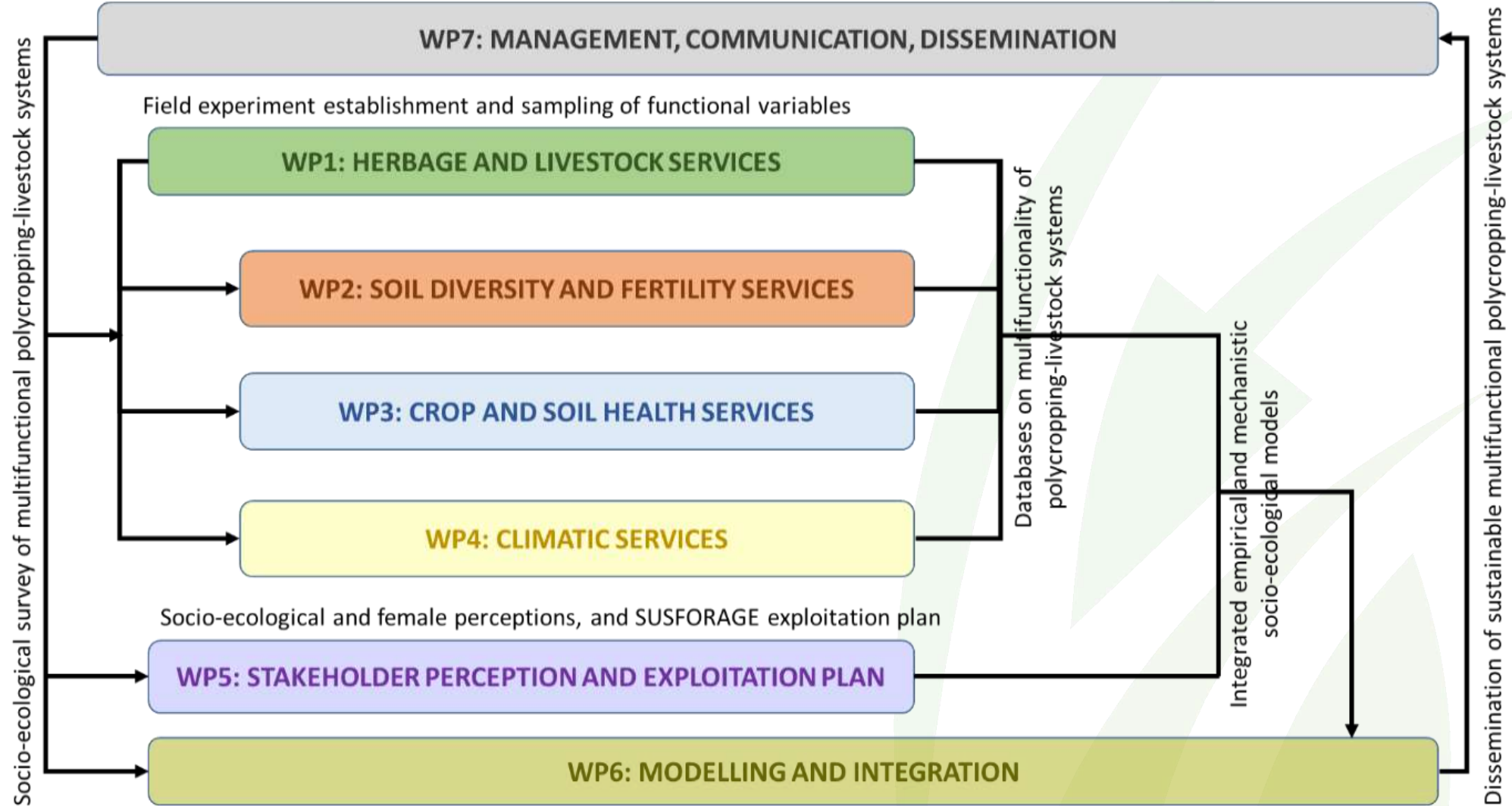
Sown forage mixtures for sustainable agroecosystems in the Mediterranean area



PRIMA

PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA

Sown forage mixtures for sustainable agroecosystems in the Mediterranean area - SUSFORAGE





	Due date
	2 (M)
Showing, WP7)	6(M)

In-call messages

receive it I will grant her access

You 10:20 AM
Indeed thank you, sure she is coming...

José Manjón-Cabeza Córdoba 10:27 AM
Abdou, if Rodrigue is opening your presentation you should stop sharing you screen, I suggest

Katja Klumpp 11:16 AM
are you planning to use tools/questionnaires to combine different socio-ecosystem services in for the participating case studies

Ángela Ribas 11:16 AM
sorry Teresa, I can not listen you properly

Ángela Ribas 11:18 AM
Anycase yesterday when you are talking about equal experimental conditions I thought in these differences in water resources among partners

Ángela Ribas 11:19 AM
and i don't know if may be it could be interesting reproduce this site specific conditions into SUSFORAGE in relation with water

Send a message to everyone

11:27 AM | nau-sfnx-klia





SUSFORAGE

Soil forage mixtures for sustainable agroecosystems in the Mediterranean area

WP No	WP Title	Lead Participant	Short Name	Person-Months	Start Month	End Month
WP1	Herbage and livestock services	5	KIS	42	3	31



Case-study	Longitude	Latitude	MAT (°C)	MAP (mm)
Solsona (CAT, ES)	41.98081	1.55701	12.0	854
Theix (FR)	45.70422	3.01602	8.6	773
Gorenje pri Divači (SI)	45.69605	13.95129	12.0	1300
Terbol (LB)	33.81203	35.99015	15.1	698
Al Sarih (JO)	32.51185	35.90908	18.1	460



Theix, FR
Spring 2022

Gorenje pri
Divači, SI
Fall 2021



Solsona,
CAT, ES
Fall 2021

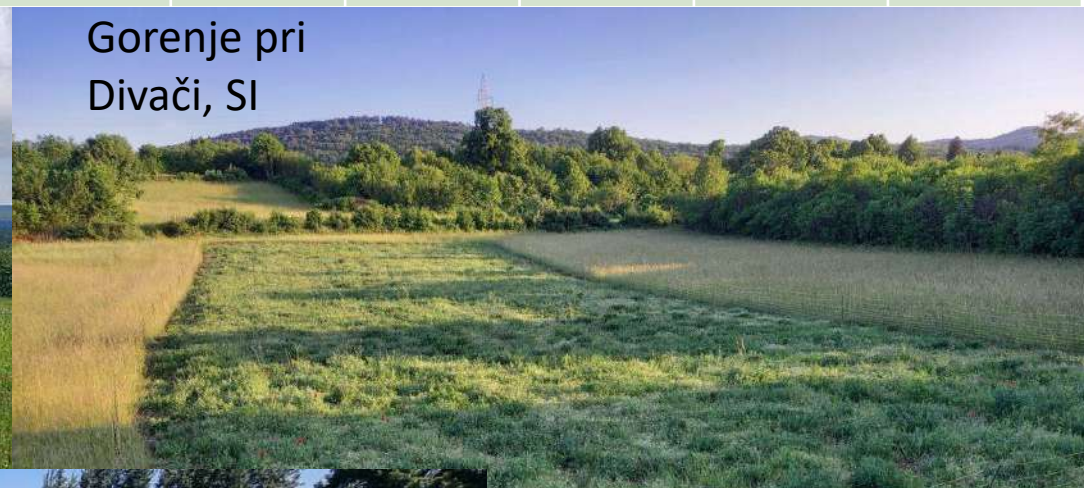


Al Sarih, JO
Fall 2021



Terbol , LB
Fall 2021

Location	Sowing	2022 H1	2022 H2	2022 H3	2023 H1	2023 H2	2023 H3	2023 H4	2024 H1
Theix, FR	2022	X		-	X	X	X	-	X
Gorenje pri Divači, SI	2021	X	X	-	X	X	X	X	X
Solsona, CAT, ES	2021	X	X	-	X	-	-	-	-
Al Sarih, JO	2021	X	-	-	X	-	-	-	X
Terbol , LB	2021	X	-	-	X	-	-	-	X



FRANCE

Grasses

Lolium perenne
Dactylis glomerata
Festuca arundinacea

Legumes

Medicago sativa
Trifolium repens
Trifolium pratense

Forbs

Cichorium intybus
Plantago lanceolata
Achillea millefolium

SLOVENIA

Lolium perenne
Dactylis glomerata
Festuca arundinacea

Medicago sativa
Onobrychis viciifolia
Trifolium pratense

Cichorium intybus
Plantago lanceolata
Achillea millefolium

CATALONIA, ES

Lolium perenne
Dactylis glomerata
Festuca arundinacea

Medicago sativa
Onobrychis viciifolia
Trifolium pratense

Cichorium intybus
Plantago lanceolata
Achillea millefolium

LEBANON

Lolium rigidum
Hordeum vulgare
Avena sativa

Medicago sativa
Trifolium incarnatus
Vicia villosa

Chicorium intybus
Plantago lanceolata
Brassica napus

JORDAN

Lolium rigidum
Hordeum vulgare
Avena sativa

Medicago sativa
Trifolium incarnatus
Vicia villosa

Chicorium intybus
Plantago lanceolata
Brassica napus

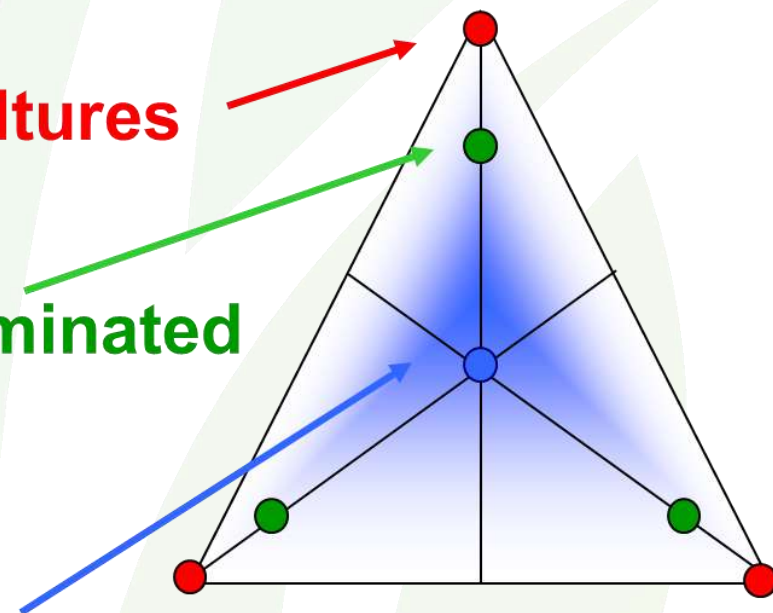


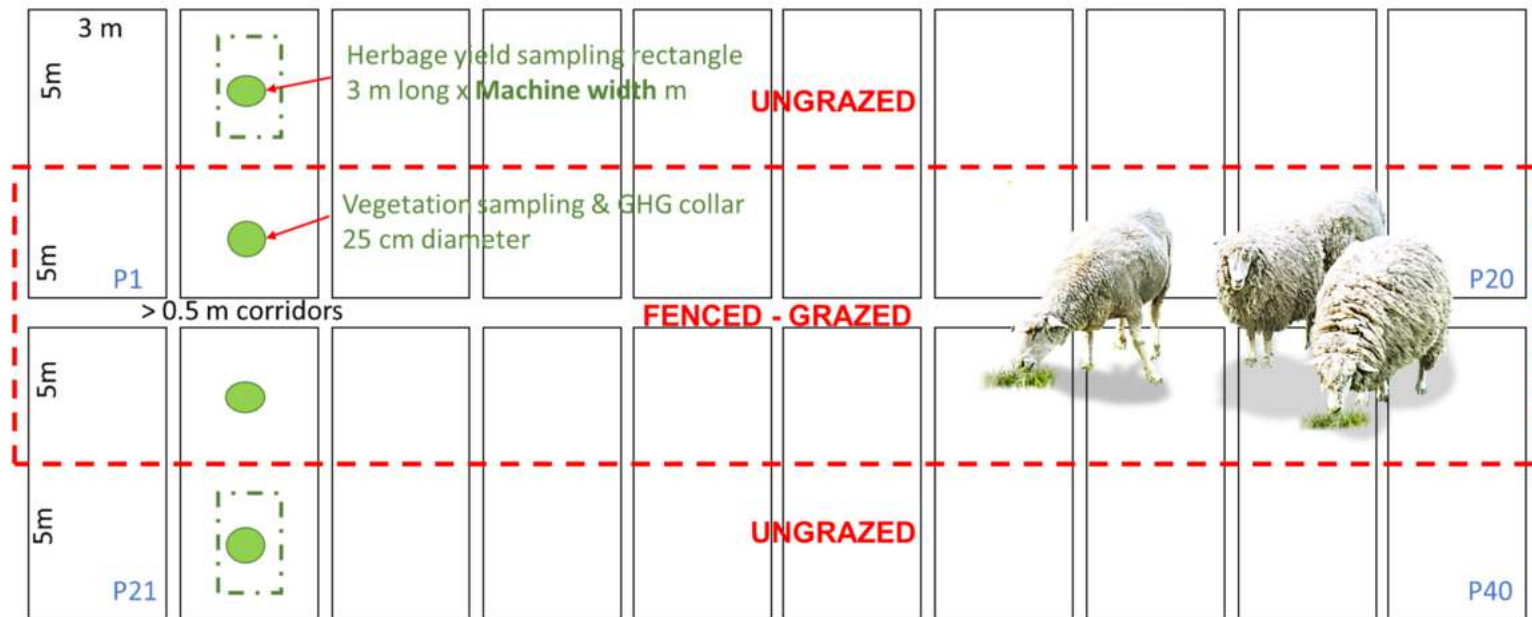
simplex design

monocultures

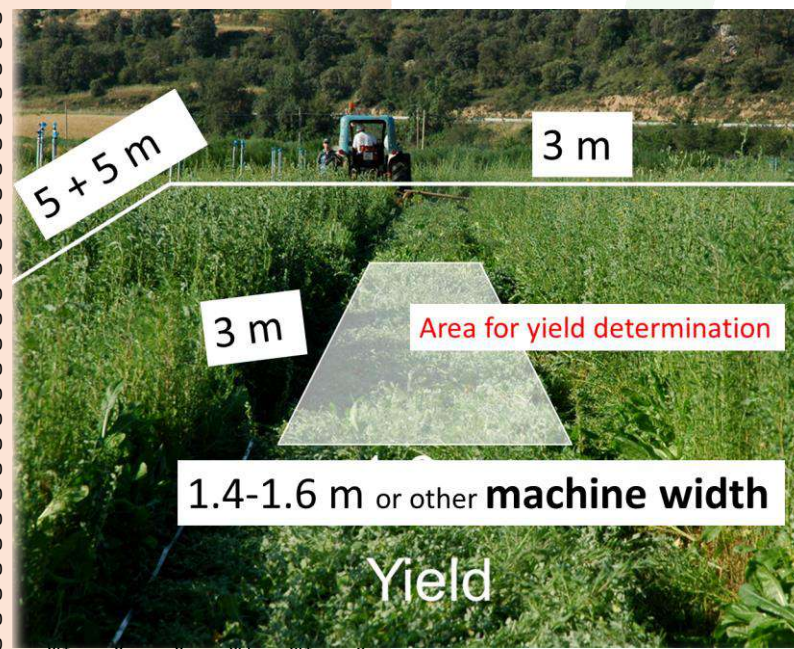
1-sps dominated mixtures

Centroid





PD	Vegetation	Diversity	SR	E_sp	PFT	G1	G2	G3	L1	L2	L3	F1	F2	F3
1	Monoculture	Monoculture	1	0.00	1	1	0	0	0	0	0	0	0	0
2	Monoculture	Monoculture	1	0.00	1	0	1	0	0	0	0	0	0	0
3	Monoculture	Monoculture	1	0.00	1	0	0	1	0	0	0	0	0	0
4	Monoculture	Monoculture	1	0.00	1	0	0	0	1	0	0	0	0	0
5	Monoculture	Monoculture	1	0.00	1	0	0	0	0	0	0	0	0	0
6	Monoculture	Monoculture	1	0.00	1	0	0	0	0	0	0	0	0	0
7	Monoculture	Monoculture	1	0.00	1	0	0	0	0	0	0	0	0	0
8	Monoculture	Monoculture	1	0.00	1	0	0	0	0	0	0	0	0	0
9	Monoculture	Monoculture	1	0.00	1	0	0	0	0	0	0	0	0	0
10	3-sp mixture	Dominance	3	0.51	3	0.8	0	0	0	0	0	0	0	0
11	3-sp mixture	Dominance	3	0.51	3	0.1	0	0	0	0	0	0	0	0
12	3-sp mixture	Dominance	3	0.51	3	0.1	0	0	0	0	0	0	0	0
13	3-sp mixture	Dominance	3	0.51	3	0	0.8	0	0	0	0	0	0	0
14	3-sp mixture	Dominance	3	0.51	3	0	0.1	0	0	0	0	0	0	0
15	3-sp mixture	Dominance	3	0.51	3	0	0.1	0	0	0	0	0	0	0
16	3-sp mixture	Centroid	3	1.00	3	0.3333	0	0	0	0	0	0	0	0
17	3-sp mixture	Centroid	3	1.00	3	0	0.3333	0	0	0	0	0	0	0
18	4-sp mixture	Dominance	4	0.64	2	0.7	0.1	0	0	0	0	0	0	0
19	4-sp mixture	Dominance	4	0.64	2	0.1	0.7	0	0	0	0	0	0	0
20	4-sp mixture	Dominance	4	0.64	2	0.1	0.1	0	0	0	0	0	0	0
21	4-sp mixture	Dominance	4	0.64	2	0.1	0.1	0	0	0	0	0	0	0
22	4-sp mixture	Dominance	4	0.64	2	0.7	0.1	0	0	0	0	0	0	0
23	4-sp mixture	Dominance	4	0.64	2	0.1	0.7	0	0	0	0	0	0	0
24	4-sp mixture	Dominance	4	0.64	2	0.1	0.1	0	0	0	0	0	0	0
25	4-sp mixture	Dominance	4	0.64	2	0.1	0.1	0	0	0	0	0	0	0
26	4-sp mixture	Co-dominance	4	0.88	2	0.4	0.1	0	0	0	0	0	0	0
27	4-sp mixture	Co-dominance	4	0.88	2	0.1	0.4	0	0	0	0	0	0	0
28	4-sp mixture	Co-dominance	4	0.88	2	0	0	0	0	0	0	0	0	0
29	4-sp mixture	Co-dominance	4	0.88	2	0	0	0	0	0	0	0	0	0
30	4-sp mixture	Co-dominance	4	0.88	3	0.4	0	0	0	0	0	0	0	0



Gorenje pri Divači, SI
Fall 2023



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Soil and forage measures for sustainable
agroecosystems in the Mediterranean area

Forage quality by the means of NIRS method



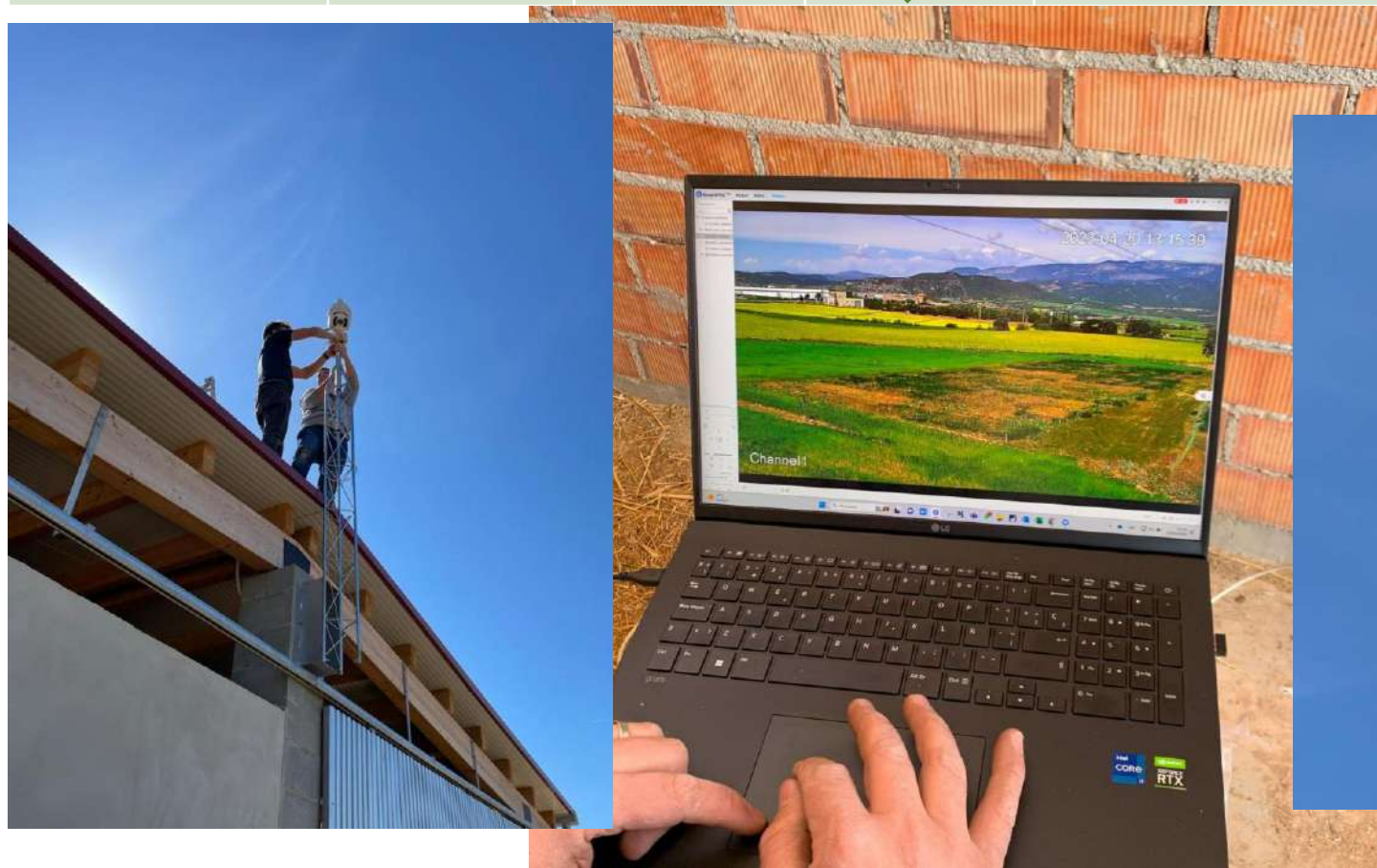
Position	Sample N°	Dz	g/kg				g/kgDM				ml/200mg		MJ/kgDM		g/kgDM		MJ/kgDM	
			Samg	DM	C. Protein	C. Fibre	NDF	ADF	Ash	Fat	WSC	Gas	ME	NFE	BE	q	NEL	
16	1		<none>	933	151	238	444	272	106	23	133	41,3	9,54	482	17,73		53,82	5,65
37	2		<none>	931	190	209	367	272	102	22	102	41,8	9,81	477	17,97		54,60	5,83



285	122	23	127	44,5	9,66	476	17,46		55,31	5,75
296	108	19	158	46,7	9,63	524	17,49		55,08	5,73
283	114	22	88	40,0	9,46	471	17,69		53,48	5,60
291	112	22	107	44,2	9,68	485	17,66		54,80	5,76

32	37		<none>	953	162	211	380	250	106	27	116	42,5	10,07	475	17,95		56,10	6,02
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Organization	Case-study region	Country	Livestock photos	Comments
CTFC	Solsona	Catalonia, ES	✓	Video
UOB	Terbol	Lebanon	✓	The majority of the images were burnt, and with the camera not fixed.
KIS	Gorenje pri Divači	Slovenia	✓	Pictures were taken by 2 cameras every 1 minute
INRAE	Theix	France		Pending
JUST	Al Sarih	Jordan	✓	Photos taken with mobile phone





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Sown forage mixtures for sustainable agrosystems in the Mediterranean area

Video & Image capture automation every 5 minutes



Escola Agrària Solsonès



SUSFORAGE

Soil forage mixtures for sustainable agrosystems in the Mediterranean area

Grid overlay on the images



Escola Agrària Solsonès



GPS_DATA - Notepad

File Edit Format View Help

Latitude, Longitude, Altitude, Date and Time

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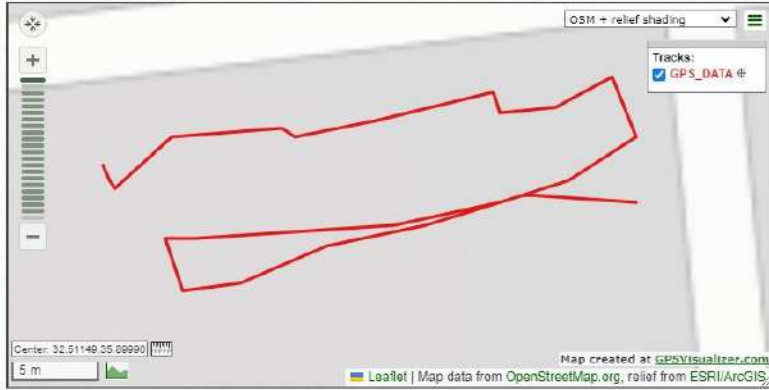
Mobile Onboarding

eurti
فروق أسعار منخفضة لتداول EURUSD ابدأ الآن
إن التداول ينطوي على مخاطر

Leaflet Maps output

Your GPS data has been processed. Your Leaflet Map should be displayed below, and it's also temporarily available to [view](#) or [download](#) from GPSVisualizer.com. If something doesn't look like you expected it to, please [contact me](#) and explain the problem.

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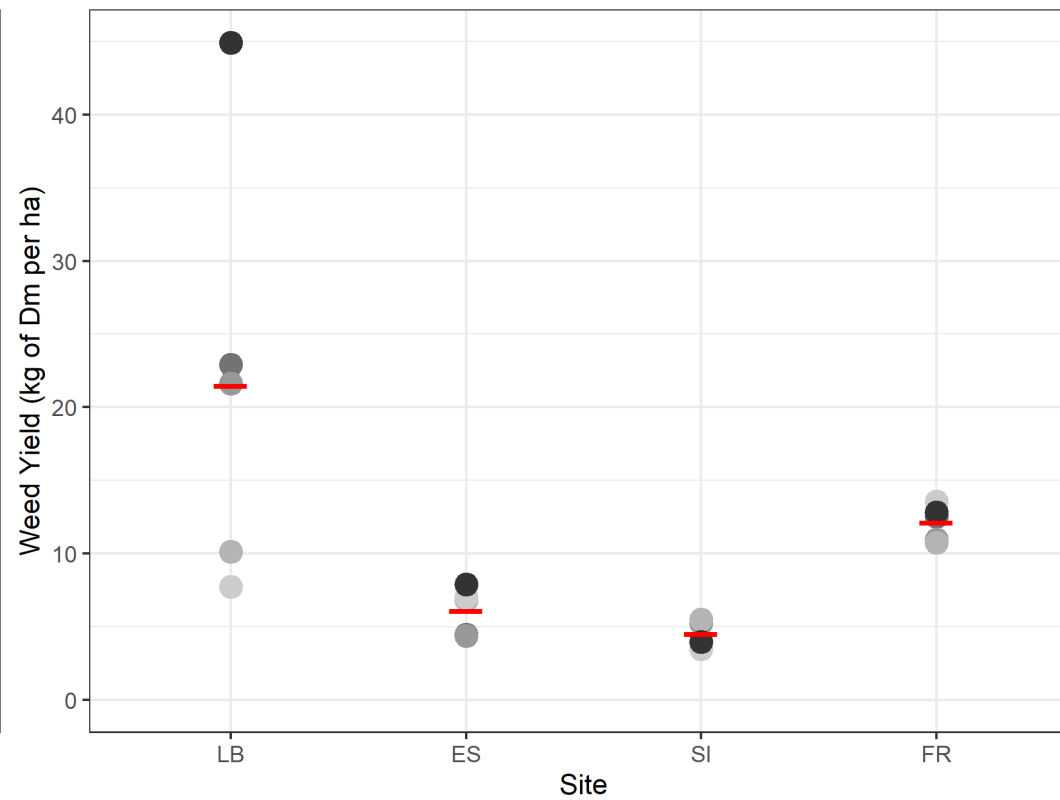
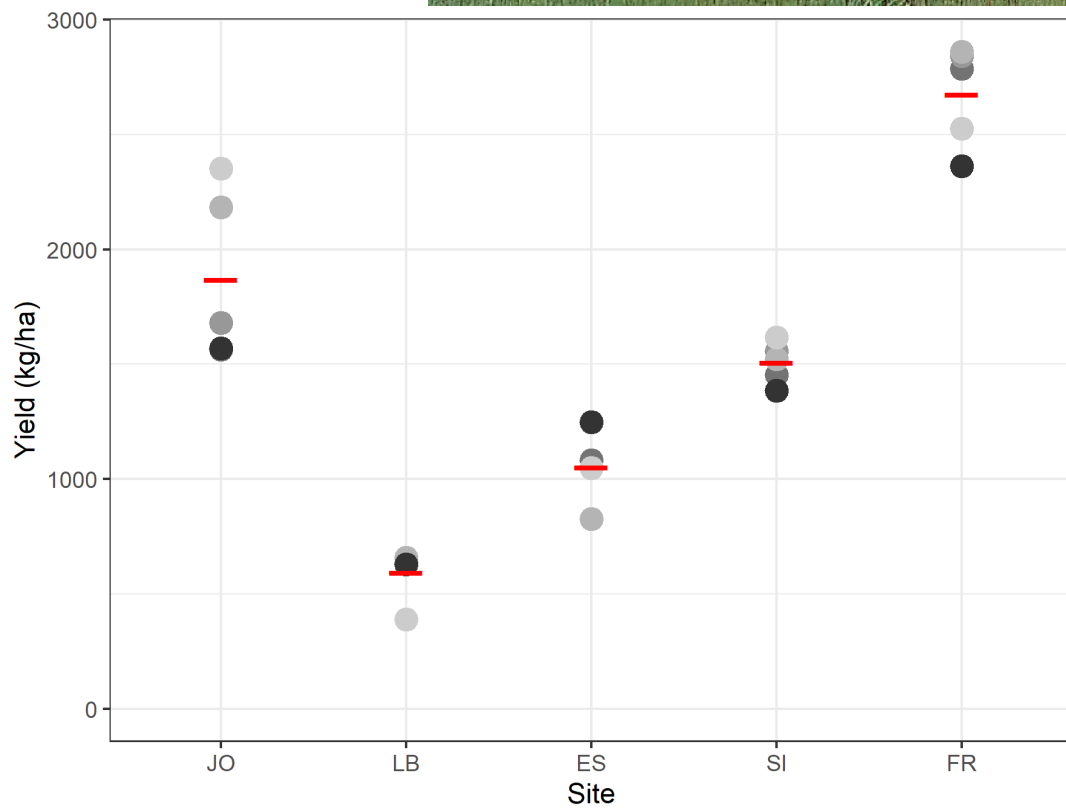
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MAP STATISTICS
center: 32.51150,35.89689

Return to the GPSV map form
(Bookmark this link to save settings)

JUST
Jordan University of Science and Technology
جامعة العلوم والتكنولوجيا الأردنية





Mixture

- Monoculture
- 3-sp mixture
- 4-sp mixture
- 6-sp mixture
- 9-sp mixture

WP No	WP Title	Lead Participant	Short Name	Person-Months	Start Month	End Month
WP2	Soil diversity and fertility services	3	HU	51	6	31

After sifting through a 10 mm sieve, soil samples were ready to be sent in three separate packages of 100, 10 grams, and 1 kilogram for analyses



WP 2 Tasks	Site	T0		T1		T2	
		done	expected	done	expected	done	expected
PLFA	Spain	analysed		analysed		analysed	
	France	analysed		analysed		analysed	
	Slovenia	analysed			Nov-23		Oct 23
	Lebanon	no samples received		samples unusable		samples to be send	
	Jordan	no samples received		samples to be send		samples to be send	
Nematode density	Spain	Yes		Yes		analysed	
	France	Yes		Yes		analysed	
	Slovenia	Yes		Yes		analysed	
	Lebanon	Yes		Yes		analysed	
	Jordan	no samples received		Yes		analysed	
Nematode taxonomy	Spain	Yes		Yes		analysed	
	France	Yes		Yes		analysed	
	Slovenia	Yes		Yes		analysed	
	Lebanon	Yes		Yes			Oct 23
	Jordan	no samples received		Yes		analysed	
Soil respiration	Spain	yes		yes		analysed	Dec 23
	France	yes		yes		analysed	Dec 23
	Slovenia	yes		yes		analysed	Dec 23
	Lebanon	yes		yes		analysed	Dec 23
	Jordan	yes		yes		analysed	Dec 23
Soil enzymes	Spain	yes		yes		analysed	Dec 23
	France	yes		yes		analysed	Dec 23
	Slovenia	yes		yes		analysed	Dec 23
	Lebanon	yes		yes		analysed	Dec 23
	Jordan	yes			Feb-24		Feb-24
Soil properties (TOC, TDN, pH...)	Spain	yes			Feb-24		Feb-24
	France	yes			Feb-24		Feb-24
	Slovenia	yes			Feb-24		Feb-24
	Lebanon	yes			Feb-24		Feb-24
	Jordan	yes			Feb-24		Feb-24
Metabarcoding	Spain	running					
	France	running					
	Slovenia	running					
Extra campaigns Tea bags	Spain						
	France		End Oct 23				
	Slovenia						
	Lebanon						
	Jordan						
Root knot nematodes		next spring???					





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Soil forage measures for sustainable agroecosystems in the Mediterranean area



WP No	WP Title	Lead Participant	Short Name	Person-Months	Start Month	End Month
WP3	Crop and soil health services	6	INRAE	36	6	31



INRAE

WP 3 Tasks	Site	Invertebrate identification	
		done	expected
Pitfall traps	Spain	analysed	
	France	analysed	
	Slovenia	analysed	
	Lebanon	no samples received (shipping difficulties, currently being resolved)	
	Jordan	no samples received	

WP No	WP Title	Lead Participant	Short Name	Person-Months	Start Month	End Month
WP4	Climatic services	2	CREAF	44	6	31



SUSFORA
Sustainable forage measures for pasture agroecosystems in the Mediterranean

WP No	WP Title	Lead Participant	Short Name	Person-Months	Start Month	End Month
WP5	Stakeholder perception and resilient agrosystems design	4	UOB	34	8	36

Addressing stakeholders' perceptions of the opportunities, benefits, and risks of polycropping-livestock systems

Objectives



Stakeholders' Perspective

Gender Perspective

Consumer
Producer
Feed Supplier
Input Supplier



Stakeholders

Consumer

- Livestock owner
- Extensive
- Semi-intensive
- Intensive

Producer

- Feed producer
- Livestock owner

Feed Supplier

- Provides feed
- Produces feed
- Harvesting, packaging, mixing

Input Supplier

- Seeds
- Fertilizers
- Pesticides
- Machinery
- Irrigation

Material and methods



Desk Review

- Area
- Production
- Potential Markets
- Biodiversity

Key Informative Interviews

- Profiling Stakeholders
- Current Situation
- Polycropping

Focus Group Discussion

- Validate and explain KII's finding
- Moderate a discussion group with all the stakeholders included

Survey

- Weighing the challenges and opportunities
- Quantifying the data

Results analysis

- **Principal component analysis**
- **Leading to a typology of women's status in different partner countries**
- **Comparative analysis of SWOT tables**
- **Integrating results in a model for simulating the effect of poly-cropping on the status of women in small ruminant dairy production**

WP No	WP Title	Lead Participant	Short Name	Person-Months	Start Month	End Month
WP6	Modelling and Integration	6	INRAE	39	3	36



- ✓ Mechanistic vs Empirical BEF models
- ✓ Training in DIM and GDI modelling
- ✓ Multifunctionality

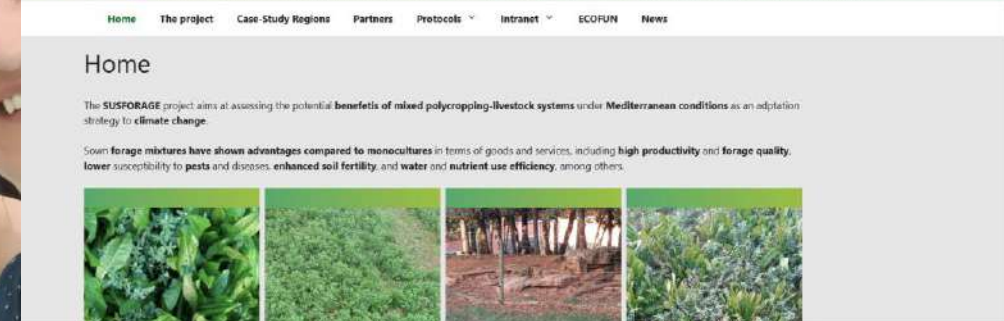
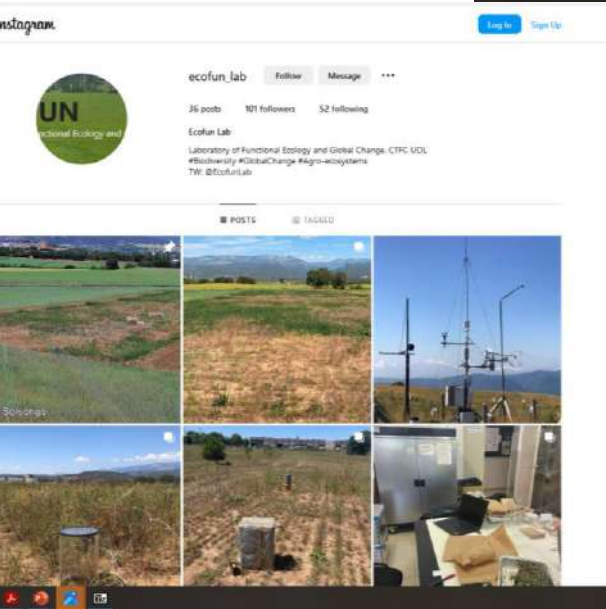
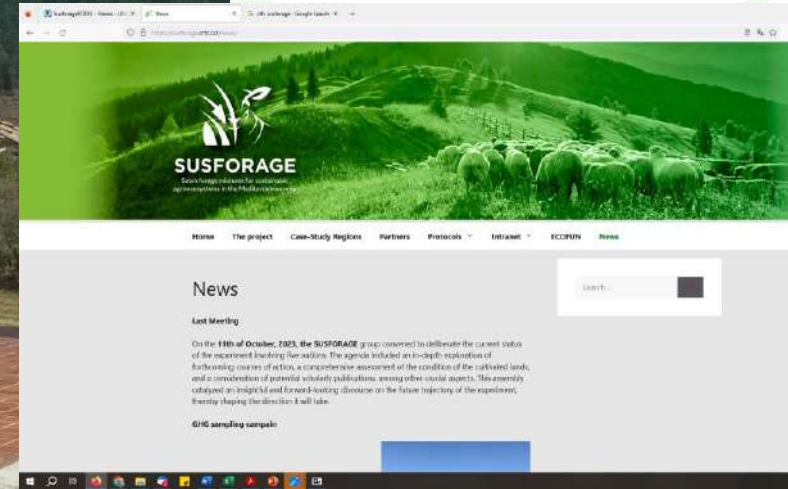


WP No	WP Title	Lead Participant	Short Name	Person-Months	Start Month	End Month
WP7	Management and dissemination	1	CTFC	21	1	36



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Soil forage mixtures for sustainable agroecosystems in the Mediterranean area





TASK	Year 1	Year 2	Year 3
WP1: Herbage and livestock services			
Field experiment: protocol distribution and establishment	■		
Harvests: Herbage sampling		■ ■ ■ ■ ■	■ ■ ■ ■ ■
Livestock experiment: protocol distribution, execution, analysis		■ ■ ■ ■ ■	
Herbage services: database construction		■ ■ ■ ■ ■	■ ■ ■ ■ ■
Herbage and livestock services: univariate modelling		■ ■ ■ ■ ■	■ ■ ■ ■ ■
WP2: Soil diversity and fertility services			
Soil sampling: protocol distribution, sample extraction, shipping		■ ■ ■ ■ ■	
Soil services: processing, database construction		■ ■ ■ ■ ■	■ ■ ■ ■ ■
Soil services: univariate modelling		■ ■ ■ ■ ■	■ ■ ■ ■ ■
WP3: Soil and crop health services			
Weeds & invertebrates: protocol distribution, sampling, shipping	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■
Soil and crop health services: processing, database construction		■ ■ ■ ■ ■	■ ■ ■ ■ ■
Soil and crop health services: univariate modelling		■ ■ ■ ■ ■	■ ■ ■ ■ ■
WP4: Climatic services			
GHG sampling: protocol distribution, sample extraction, shipping		■ ■ ■ ■ ■	
Climatic services: processing, database construction		■ ■ ■ ■ ■	■ ■ ■ ■ ■
Climatic services: univariate modelling		■ ■ ■ ■ ■	■ ■ ■ ■ ■
WP5: Stakeholder perception and exploitation			
Targeted stakeholder population selection in Case Study regions	■ ■ ■ ■ ■		
Targeted female stakeholders selection in Case Study regions		■ ■ ■ ■ ■	
Female stakeholder interviews in Case Study regions		■ ■ ■ ■ ■	
Multi-actor socio-ecological workshops in Case Study regions		■ ■ ■ ■ ■	
Exploitation opportunities, perceived benefits, and constraints		■ ■ ■ ■ ■	■ ■ ■ ■ ■
WP6: Modelling and integration			
Mechanistic modelling of multifunctionality			
Empirical modelling of multifunctionality			
Integration of empirical/mechanistic multifunctionality modelling			
Integrated socio-ecological modelling, sustainable systems design			■ ■ ■ ■ ■
WP7: Management, communication and dissemination			
Kick-off, Interim and Final meetings	■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■
SUSFORAGE Webpage and logo, protocol design, distribution	■ ■ ■ ■ ■		
Implementation of communication, dissemination, exploitation pl	■ ■ ■ ■ ■		
Implementation of knowledge management, protection strategy	■ ■ ■ ■ ■		



THANKS!



Escola Agrària Solsonès