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Mountain grasslands and livestock in the context of climate change

Sustainable forage systems in mountain areas: a case study LIFE18 CCM/IT/001093 – LIFE agriCOlture

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Adaptation and Mitigation Plans (AMPs)

AMPs are tailored programs for individual farms designed to enhance their adaptive capacity to changing climate scenarios while simultaneously mitigating their environmental impact. These plans can be implemented at either the farm or field level, depending on resource availability.

Carbon footprint of milk (kg CO ₂ eq/kg FPCM)					
		Change in SOC NOT accounted		Change in SOC ACCOUNTED	
Farm n.	Base line ex-ante	ex-post	Δ % ante vs post	ex-post	Δ % ante vs post
1	1.46	1.39	-5.1	1.38	-5.48
2	1.29	1.11	-14.0	1.03	-20.16
3	1.43	1.35	-5.9	1.33	-6.99
4	1.46	1.40	-4.2	1.39	-4.79
5	1.81	1.67	-7.4	1.62	-10.50
6	1.60	1.48	-7.8	1.47	-8.13
7	1.42	1.33	-6.1	1.26	-11.27
8	1.40	1.38	-1.7	1.35	-3.57
9	1.63	1.57	-3.6	1.48	-9.76
10	1.60	1.50	-6.2	1.47	-8.13

A three-year case study



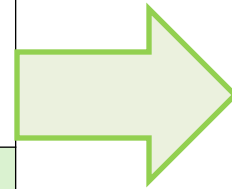
Manuring of exhausted permanent grassland, ploughing and sowing of forage wheat



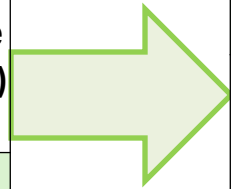
Direct sowing of forage species on wheat stubble in late summer and then mowing

Results

SELF PRODUCTION - <u>ex-ante</u>					
Parameter	Alfalfa hay	Wheat hay forage - Plowing	Spring forage crops	Mixed meadow - Plowing	Wheat hay forage - Direct seeding
ha	25,3	-	5	1,1	-
Yield t DM/ha	5,5	-	5,3	3,4	-



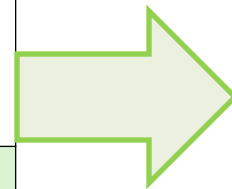
FEED RATIO (cow in milk) - <u>ex-ante</u>					
Production	Alfalfa hay (kg/cow/day)	Spring forage crops (kg/cow/day)	Mixed meadow (kg/cow/day)	Wheat hay forage (kg/cow/day)	Concentrate (kg/cow/day)
Self-produced	11	2	0,5	-	-
Purchased	2	-	-	-	10



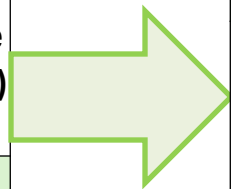
Milk production efficiency, milk production and carbon footprint - <u>ex-ante</u>		
Feed efficiency (kg FPCM/ kg DMI)	Milk yield (kg FPCM/cow/year)	kg CO ₂ /kg FPCM
1.31	10,104	1.29

Simulated change

SELF PRODUCTION - <u>ex-post</u>					
Parameter	Alfalfa hay	Wheat hay forage - Plowing	Spring forage crops	Mixed meadow - Direct seeding	Wheat hay forage - Direct seeding
ha	15,3	5	-	6,1	5
Yield T DM/ha	5,5	9,4	-	8,9	9,4



FEED RATIO (cow in milk) - <u>ex-post</u>					
Production	Alfalfa hay (kg/cow/day)	Spring forage crops (kg/cow/day)	Mixed meadow (kg/cow/day)	Wheat hay forage (kg/cow/day)	Concentrate (kg/cow/day)
Self-produced	9,5	3,8	-	4	-
Purchased	1,25	-	-	-	10



Milk production efficiency, milk production and carbon footprint - <u>ex-post</u>		
Feed efficiency (kg FPCM/ kg DMI)	Milk yield (kg FPCM/cow/year)	kg CO ₂ /kg FPCM
1.33	11,315	1.11

Thank you for the attention

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