

StartClim2009.A

Klimatisch beeinflusste Vegetations- entwicklung und Nutzungsintensivierung von Fettwiesen im österreichischen Berggebiet

Eine Fallstudie aus dem Kerngebiet der
österreichischen Grünlandwirtschaft

Anhang

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Tabelle A: Vegetationstabelle

Variante	1	2	3	4	5	6	7	8
Aufnahmenummer	MAB1N033	MAB_237	MAB1_084	MAB1_085	MAB1_140	MAB_456	MAB1_124	MAB1_121
Vegetationshöhe mittel	50	50	20	20	50	100	100	100
Deckung der Krautschicht	1	100	100	100	100	100	100	100
Deckung der Mooschicht	1	2	10	95	20	100	100	100
Deckung des offenen Bodens	1	1	5	20	5	0	0	0
Vegetation								
Ubiquisten								
Taraxacum officinale agg.	2a	1b	2a	2b	2a	2	3a	1b
Ranunculus acris ssp. acris	1a	1	2	1a	1	2	2a	2a
Rumex acetosa	1b	1a	1	1	1	2	2	1b
Plantago lanceolata	2a	2a	2	2	1b	1	1	1
Achillea millefolium agg.	1a	1a	1a	1	1a	2b	2a	2
Cerastium holosteoides	1a	1	1a	1a	1a	1	1	1
Veronica chamaedrys ssp. chamaedrys	1a	2	1a	1	1	1a	1b	1a
Bellis perennis	1b	3b	2a	2a	1	3	1	2a
Alchemilla monticola	1	2a	1b	2a	1	3a	2	2b
Ranunculus repens								
Prunella vulgaris	1	1a	2a	1	1a	1a	1	1
Glechoma hederacea								
Leontodon autumnalis		1a						
Elymus repens		1a					1a	1a
Deschampsia cespitosa	r		r	r		2a	1a	
Ertragskundlich wichtige Arten								
Dactylis glomerata ssp. glomerata	1	1b	1	1	1b	2a	1a	2
Festuca pratensis ssp. pratensis	1a	1a	1b	1	1	2	1	2
Trisetum flavescens	2	2a	3a	3	3b	3a	3b	3a
Poa pratensis agg.								
Alopecurus pratensis	1a	1	1					
Phleum pratense	1a	1b	1	1	1	1	1	1
Trifolium pratense	1	2	2a	1	1a	1b	1	1a
Poa trivialis	2b	3b	1	1b	2b	4	2b	2a
Trifolium repens	1	3a	2	2	2	1a	2	1
Lolium x boucheanum								
Lolium perenne	r							
Intensivwiesenarten								
Rumex obtusifolius	+	+	r			1b	r	+
Lamium album								
Heracleum sphondylium ssp. sphondylium	3a	2	1b	2a	1a		1	r
Aegopodium podagraria	1a	+	1	1	1b	1a	2a	+
Chaerophyllum hirsutum	1a	2b	1a		1b	1b	1	1
Carum carvi	+	1	1	2		2a	+	+
Pimpinella major	2b	1	2a	+		1a	1b	+
Anthriscus sylvestris	1b							
Chaerophyllum aureum								
Lückerbüßer								
Plantago major ssp. major	1a							
Poa annua	1a	+	+	2a				
Veronica serpyllifolia ssp. serpyllifolia	1	+	1a	1a	1a	1	1a	1
Veronica arvensis	+	1	+	1	+	1	+	1
Capsella bursa-pastoris								
Bromus hordeaceus ssp. hordeaceus		r				1	1a	
Stellaria media								
Arenaria serpyllifolia								
Brassica rapa								
Arten der zweischürigen Fettwiesen								
Festuca rubra agg.	r	1a	1	+	2a		2	3b
Agrostis capillaris	+							
Leontodon hispidus	1a	+	2	1	1	+	1	1
Vicia cracca	r	+	1a	1a	1	+	1a	1a
Lathyrus pratensis	+	+	1a	1a		1a	+	1a
Anthoxanthum odoratum								
Vicia sepium	1a							
Leucanthemum vulgare agg.	+	1	+	+	+	1a	+	1a
Cynosurus cristatus	+	1a	+	+	+	1a	1b	
Centaurea jacea	1a	+	+	+	+	+	+	+
Holcus lanatus	+							
Lychnis flos-cuculi								
Euphrasia officinalis ssp. rostkoviana								
Geranium pratense								
Arrhenatherum elatius		1a						
Crepis biennis	1a	1	2	+				
Lotus corniculatus								
Tragopogon orientalis	+	1a						
Campanula patula		r						
Avenula pubescens ssp. pubescens			1a	+				
Knautia arvensis ssp. arvensis	+							
Galium album								
Galium mollugo								
Silene dioica	2a	1b	1a	1a	+	+	+	+
Geranium sylvaticum	3a	1	1	1				
Carex sylvatica	1a	1a	1b	1a	+	+	+	+
Colchicum autumnale	r	r	+	+	+	+	+	+
Cirsium oleraceum	+	1	r	1b				

Tabelle B
Stetigkeitstabelle - Vergleich 1997-2010

Temperatur-Zahl	CSR-Typ	Artname	Zu- und Abnahmen in der Stetigkeit (2010 - 1997)								Stetigkeit 1997	
			Variante 1	Variante 2	Variante 3	Variante 4	Variante 5	Variante 6	Variante 7	Variante 8		gesamt
		Hochste Wiesenarten ohne Änderungstendenzen										
	csr	Achillea millefolium agg.	-1	1	0	-1	-1	0	0	0	-2	46
	csr	Agrostis capillaris	2	0	1	0	0	0	2	-1	4	17
	csr	Ajuga reptans	0	0	0	-1	-1	0	0	0	-2	16
	csr	Alchemilla glabra	2	0	1	-1	0	0	0	0	2	15
	csr	Alchemilla monticola	0	0	1	-1	-1	1	0	-1	-1	39
	sr	Anthoxanthum odoratum	0	1	-1	0	0	0	0	-1	-1	23
	cr	Anthriscus sylvestris	0	0	0	0	-1	0	0	1	0	21
5	csr	Arrhenatherum elatius	3	-2	0	0	0	0	-2	0	-1	17
	cr	Bellis perennis	0	-1	0	0	-1	0	0	0	-2	45
5	csr	Carex sylvatica	-1	1	0	0	0	0	0	0	0	11
4	csr	Carum carvi	0	-1	2	-1	-1	-2	0	2	-1	23
	r	Cerastium holosteoides	0	0	0	-1	-2	0	0	0	-3	47
3	c	Chaerophyllum hirsutum	0	1	0	0	0	-1	0	0	0	24
	c	Cirsium oleraceum	1	0	-1	-1	0	0	-1	0	-2	17
5	cr	Crepis biennis	-2	0	1	-1	-1	1	1	-1	-2	29
5	csr	Cynosurus cristatus	0	1	2	-1	-1	0	0	-1	0	42
	c	Dactylis glomerata ssp.glomerata	0	0	0	0	0	0	0	0	0	47
	c	Festuca pratensis ssp.pratensis	-1	0	0	0	0	-1	0	0	-2	47
	csr	Festuca rubra agg.	0	2	0	0	0	0	-1	-1	0	21
4	c	Geranium sylvaticum	0	0	0	0	0	0	0	0	0	11
5	csr	Glechoma hederacea	0	-1	0	0	0	-1	1	-1	-2	21
	r	Leontodon autumnalis	-1	0	1	-1	1	0	0	0	0	13
	csr	Leontodon hispidus	-1	0	0	0	0	0	0	0	-1	26
	csr	Pimpinella major	-1	0	1	-1	-1	0	0	1	-1	26
	c	Poa pratensis agg.	1	0	0	0	0	0	0	1	2	45
	cr	Poa trivialis	0	-1	-1	0	0	1	0	0	-1	47
	csr	Prunella vulgaris	0	1	3	1	-2	0	-1	-2	0	33
	csr	Ranunculus acris ssp.acris	0	0	0	0	0	0	0	0	0	47
	cr	Ranunculus repens	3	1	-1	0	0	1	0	-4	0	39
	csr	Rumex acetosa	0	0	0	0	0	0	0	0	0	47
	csr	Taraxacum officinale agg.	0	0	0	0	0	0	0	0	0	48
	r	Tragopogon orientalis	0	0	1	0	0	0	-1	-1	-1	11
	csr	Trifolium pratense	0	0	0	-1	-1	0	0	0	-2	48
	cr	Trifolium repens	0	0	0	0	0	0	0	0	0	48
	c	Trisetum flavescens	1	0	0	0	-1	0	0	0	0	47
5	csr	Veronica chamaedrys ssp.chamaedrys	-1	0	0	0	0	0	-1	0	-2	46
		Arten der Intensivwiesen mit abnehmender Stetigkeit										
5	c	Aegopodium podagraria	0	0	-1	0	-1	-1	0	-1	-4	35
6	csr	Alopecurus pratensis	1	0	-1	-1	1	-2	0	-3	-5	38
5	csr	Chaerophyllum aureum	1	0	0	-2	0	0	-2	0	-3	8
	c	Deschampsia cespitosa	0	0	-1	0	-1	0	-1	-2	-5	28
6	c	Elymus repens	0	-1	-1	-2	-1	0	-1	-1	-7	26
6	c	Galium mollugo	0	-1	-2	0	0	0	-1	-1	-5	7
5	c	Heracleum sphondylium ssp.sphondylium	0	1	0	0	-3	1	-3	0	-4	38
	cr	Lamium album	1	1	0	-1	-1	0	-1	-2	-3	11
	csr	Phleum pratense	0	0	-1	1	0	-1	-1	-4	-6	36
	csr	Plantago lanceolata	-1	-1	0	0	-1	0	-1	-1	-5	48
5	cr	Rumex obtusifolius	-2	0	0	0	0	0	0	-1	-3	23
6	c	Symphytum officinale	0	0	0	0	-1	-1	0	-1	-3	7
		Ruderale Arten mit abnehmender Stetigkeit										
	r	Arenaria serpyllifolia	-1	-1	0	0	0	0	0	0	-2	3
	r	Brassica rapa	-1	-1	-1	0	0	-1	0	0	-4	4
6	cr	Bromus hordeaceus ssp.hordeaceus	-1	-1	-1	0	-2	0	-1	-3	-9	17
	r	Capsella bursa-pastoris	-1	0	-1	-3	-2	0	-3	-1	-11	21
	r	Poa annua	-1	-1	1	0	0	0	-2	-2	-5	22
	r	Plantago major ssp.major	-3	-1	0	-1	-1	0	-4	-1	-11	23
6	r	Polygonum aviculare agg.	0	-1	-1	0	-1	-1	-1	0	-5	5
	r	Stellaria media	-1	1	1	-1	-1	-1	-1	-5	-8	11
6	r	Veronica arvensis	-2	0	1	-2	-2	-1	-4	-5	-15	37
	r	Veronica serpyllifolia ssp.serpyllifolia	-2	0	0	0	-3	-1	-1	-2	-9	42
5	r	Lamium purpureum	0	-1	0	0	0	0	0	0	-1	1
6	r	Barbarea vulgaris	0	0	0	0	-1	0	0	0	-1	1
		Arten der zweischürigen Fettwiesen mit abnehmender Stetigkeit										
6	r	Campanula patula	-2	-1	0	-2	0	0	-1	-3	-9	20
4	csr	Cardaminopsis halleri	-1	0	1	-2	0	0	0	-1	-3	11
	csr	Centaurea jacea	-2	0	-1	-1	-1	0	0	0	-5	9
5	csr	Colchicum autumnale	-2	0	0	0	-2	0	0	-1	-5	10
3	csr	Crocus albiflorus	-1	0	0	0	-1	0	0	0	-2	8
	sr	Equisetum palustre	0	0	0	-1	0	0	-1	0	-2	4
5	c	Filipendula ulmaria	0	0	0	0	-1	0	0	-1	-2	4
5	csr	Geranium phaeum ssp.phaeum	0	-1	0	-1	-1	0	0	0	-3	10
6	csr	Holcus lanatus	-2	0	0	-1	-1	-1	-2	0	-7	8
	c	Hypericum maculatum	-1	1	1	-2	0	0	-1	0	-2	11
5	c	Lathyrus pratensis	0	-1	1	-1	-1	0	-3	-1	-6	24
	csr	Leucanthemum vulgare agg.	0	-1	0	0	-3	-1	-2	0	-7	22
	csr	Lotus corniculatus	1	0	0	0	-2	0	-2	0	-3	8

Tabelle B
Stetigkeitstabelle - Vergleich 1997-2010

Temperatur-Zahl	CSR-Typ	Artname	Zu- und Abnahmen in der Stetigkeit (2010 - 1997)								Stetigkeit 1997	
			Variante 1	Variante 2	Variante 3	Variante 4	Variante 5	Variante 6	Variante 7	Variante 8		gesamt
5	cr	Medicago lupulina	0	-1	0	0	0	0	-2	-1	-4	7
	csr	Myosotis sylvatica	-3	0	0	1	0	0	-3	0	-5	19
	csr	Plantago media	0	0	0	0	0	0	-1	-2	-3	5
	csr	Primula elatior	-1	0	-1	0	-2	0	-1	0	-5	9
	csr	Silene dioica	-4	0	0	-2	-1	0	0	0	-7	23
5	c	Vicia cracca	-2	0	0	0	-1	0	-1	-1	-5	32
	csr	Vicia sepium	0	-2	0	-2	-2	-1	-1	1	-7	28
		Eingesäte Arten mit zunehmender Tendenz										
6	csr	Lolium perenne	0	2	0	0	0	0	2	1	5	13
7	c	Lolium x boucheanum	1	0	1	0	1	0	2	3	8	3
		Sonstige										
5	csr	Agrostis gigantea	0	0	0	0	0	0	-1	0	-1	2
	cr	Agrostis stolonifera	-1	0	0	0	0	0	0	0	-1	1
	csr	Alchemilla coriacea agg.	0	0	0	-1	0	0	0	0	-1	1
3	csr	Alchemilla crinita	1	1	0	0	0	0	0	1	3	5
4	csr	Alchemilla gracilis	0	-1	0	0	-1	0	-1	0	-3	3
3	csr	Alchemilla reniformis	0	0	0	0	0	0	0	0	0	1
	csr	Alchemilla sp.	0	0	-1	0	-1	0	-1	-1	-4	4
4	csr	Alchemilla straminea	0	0	0	0	0	0	0	0	0	1
	csr	Alchemilla subcrenata	0	0	0	0	0	0	0	0	0	3
4	csr	Alchemilla xanthochlora	0	0	0	0	0	0	-1	0	-1	2
	c	Angelica sylvestris	0	0	0	-1	-1	0	0	0	-2	2
6	r	Arabidopsis thaliana	0	0	-1	0	0	0	1	0	0	3
4	csr	Astrantia major	0	0	0	0	0	0	0	0	0	1
	csr	Avenula pubescens ssp.pubescens	-1	0	1	0	-1	1	0	0	0	6
	s	Briza media	1	0	0	0	0	0	0	0	1	1
	cs	Bromus erectus	0	0	0	0	0	0	0	0	0	1
	c	Bromus inermis	-1	0	0	0	0	0	0	0	-1	1
	s	Caltha palustris	0	0	0	0	0	0	0	0	0	3
3	cs	Calyocorsus stipitatus	1	0	0	0	0	0	0	0	1	2
6	csr	Campanula rapunculoides	0	0	1	0	0	0	0	0	1	1
		Campanula sp.	0	0	0	0	0	0	0	0	0	1
	s	Cardamine amara	0	0	0	0	0	0	0	0	0	2
	csr	Cardamine pratensis	0	-2	0	0	0	0	1	1	0	8
	cs	Carex acuta	0	0	0	0	0	0	0	0	0	2
	s	Carex caryophyllea	0	0	-1	0	0	0	0	0	-1	1
	csr	Carex flacca	1	0	0	0	-1	0	0	0	0	1
6	cr	Carex hirta	0	0	0	0	0	0	-1	0	-1	2
	csr	Carex nigra	0	0	0	0	0	0	0	0	0	2
4	cr	Carex pallescens	0	0	0	0	0	0	0	0	0	1
	s	Carex panicea	1	0	0	0	0	0	0	0	1	1
5	csr	Carex spicata	0	0	0	0	-1	0	-1	0	-2	2
4	cs	Centaurea pseudophrygia	0	0	0	0	0	0	-1	0	-1	4
	csr	Clinopodium vulgare	0	0	0	0	0	0	0	0	0	1
2	csr	Crepis aurea	1	-1	0	0	0	0	-1	0	-1	6
6	r	Crepis capillaris	0	0	0	0	0	0	0	0	0	1
6	csr	Daucus carota	0	0	0	0	0	0	0	0	0	1
	r	Euphrasia officinalis ssp.rostkoviana	1	1	1	0	-1	0	-1	0	1	2
5	c	Festuca arundinacea	0	0	0	0	-1	0	0	0	-1	3
5		Fraxinus excelsior	0	0	-1	0	0	0	0	0	-1	2
	r	Galeopsis sp.	0	0	0	0	0	0	-1	0	-1	1
	c	Galium album	0	0	-1	0	1	0	0	1	1	6
5	sr	Galium uliginosum	0	0	0	0	0	0	-1	0	-1	1
	c	Galium x pomeranicum	0	-1	0	0	0	0	0	0	-1	1
6	c	Geranium pratense	0	0	1	0	0	0	0	0	1	2
	csr	Geum rivale	-1	0	0	0	0	0	0	0	-1	4
5	csr	Holcus mollis	-1	0	0	0	0	0	0	-1	-2	3
5	r	Hypochoeris radicata	0	-1	0	0	0	0	0	0	-1	1
6	cs	Iris sibirica	0	0	0	0	0	0	0	0	0	1
4	cs	Juncus filiformis	0	0	0	0	2	0	0	0	2	1
5	csr	Juncus inflexus	0	0	0	0	0	0	0	0	0	1
6	csr	Knautia arvensis ssp.arvensis	-1	0	0	0	0	0	0	0	-1	4
	s	Luzula campestris agg.	0	-1	0	0	0	0	0	0	-1	2
5	csr	Lychnis flos-cuculi	0	1	0	0	-1	0	-1	0	-1	7
6	c	Medicago sativa	0	0	-1	0	0	0	0	0	-1	1
6	r	Myosotis arvensis	0	0	0	0	0	0	-1	0	-1	1
	csr	Myosotis palustris agg.	0	0	0	0	0	0	0	0	0	1
3	csr	Narcissus radiiflorus	0	0	0	0	0	0	0	0	0	4
4	csr	Persicaria bistorta	0	0	0	0	-1	0	0	0	-1	4
		Persicaria sp.	0	0	0	0	-1	0	0	0	-1	1
3	csr	Phleum rhaeticum	-1	0	0	-1	0	0	0	0	-2	3
5	c	Phragmites australis	0	0	0	0	-1	0	0	0	-1	1
3	cr	Poa supina	0	1	0	0	0	0	2	0	3	8
3	csr	Potentilla aurea	-1	0	0	0	0	0	0	0	-1	1
6	s	Potentilla pusilla	0	0	0	0	0	0	0	-1	-1	1
6	csr	Potentilla reptans	0	0	-1	0	0	0	0	0	-1	7
6	csr	Ranunculus auricomus agg.	0	1	0	0	0	0	1	0	2	2

Tabelle B
Stetigkeitstabelle - Vergleich 1997-2010

Temperatur- Zahl	CSR-Typ	Artname	Zu- und Abnahmen in der Stetigkeit (2010 - 1997)								Stetigkeit 1997			
			Variante 1	Variante 2	Variante 3	Variante 4	Variante 5	Variante 6	Variante 7	Variante 8		gesamt		
6	sr	Ranunculus bulbosus	0	0	0	0	0	0	0	0	0	0	1	
5	sr	Ranunculus ficaria ssp.bulbilifer	-1	0	0	0	0	0	0	2	0	1	1	
3	csr	Ranunculus montanus	0	0	0	0	0	0	0	0	0	0	7	
	sr	Rhinanthus alectorolophus ssp.alectorolophus	1	1	-1	0	0	0	0	0	0	1	3	
	sr	Rumex acetosella ssp.acetosella	0	0	-1	0	0	0	0	0	0	0	-1	2
5	cr	Rumex crispus	0	0	0	0	-1	0	0	0	0	-1	2	
5	cs	Sanguisorba officinalis	0	0	0	0	0	0	0	-1	0	-1	2	
5	cs	Scirpus sylvaticus	0	0	0	0	0	0	0	0	0	0	2	
6	csr	Senecio aquaticus	-1	0	0	0	0	0	0	0	0	0	-1	2
	csr	Silene latifolia ssp.alba	0	0	0	0	0	0	0	0	-1	-1	2	
	csr	Silene vulgaris ssp.vulgaris	0	0	0	0	0	0	0	0	0	0	1	
	csr	Stellaria graminea	0	0	-1	1	0	-1	0	0	0	-1	4	
	csr	Thalictrum lucidum	0	0	0	0	-1	0	0	0	0	-1	1	
6	r	Trifolium campestre	0	0	0	0	0	0	0	0	0	0	1	
6	csr	Trifolium hybridum	0	0	0	0	0	0	0	0	0	0	2	
6	c	Trifolium medium	0	0	0	0	0	0	0	0	0	0	1	
3	csr	Trollius europaeus	-1	0	0	0	0	0	0	0	0	-1	4	
	c	Urtica dioica	0	0	0	0	0	0	0	-2	0	-2	2	
	csr	Veratrum album ssp.album	0	0	0	0	0	0	0	0	0	0	1	
	sr	Veronica beccabunga	0	0	0	0	0	0	0	0	0	0	1	
5	r	Viola arvensis ssp.arvensis	0	1	-1	0	0	-1	0	0	0	-1	2	
	csr	Viola hirta	0	0	-1	0	0	0	0	0	0	-1	1	
		Viola sp.	0	-1	0	0	0	0	0	0	0	-1	1	
	r	Viola tricolor	-1	0	0	0	0	0	0	0	0	-1	1	
		Neu hinzugekommene Arten												
		Acer pseudoplatanus	2	1	0	0	0	0	0	0	1	4	0	
	r	Ajuga genevensis	0	1	0	0	0	0	0	0	0	1	0	
	csr	Alchemilla micans	0	1	0	1	0	0	1	0	3	0		
	sr	Alopecurus geniculatus	0	0	0	1	0	0	0	0	0	1	0	
6	cr	Armoracia rusticana	0	0	0	0	0	0	0	0	1	1	0	
	s	Campanula rotundifolia agg.	0	1	0	0	0	0	0	0	0	1	0	
5	c	Cirsium arvense	1	0	0	0	0	0	0	0	0	1	0	
	r	Fragaria vesca	0	0	0	0	0	0	0	1	0	1	0	
5	csr	Juncus effusus	0	0	0	0	1	0	0	0	0	1	0	
6	csr	Lysimachia nummularia	0	0	0	0	1	0	0	0	0	1	0	
	c	Medicago x varia	0	0	1	0	0	0	0	0	0	1	0	
	s	Pimpinella saxifraga	0	1	0	0	0	0	0	0	0	1	0	
		Polygonum sp.	0	0	0	0	0	0	0	1	0	1	0	
	csr	Silene nutans	0	1	0	0	0	0	0	0	0	1	0	