

Supplementary material

Characteristics of included studies

Note that no studies were suitable for meta-analysis as effect sizes examining the same substantive concepts could not be generated. The following studies met the review inclusion criteria. Only two of the studies specifically examined MG5 managed as pasture and involved grazing comparisons (*italics*).

Study	Characteristics
Adams, A. W. (1955). "Succisa Pratensis Moench." The Journal of Ecology 43(2): 709-718.	Review
Agnew, A. D. Q. (1961). "The Ecology of Juncus Effusus L. in North Wales." The Journal of Ecology 49(1): 83-102.	Review
Augustine, D. J. and S. J. McNaughton (1998). "Ungulate effects on the functional species composition of plant communities: Herbivore selectivity and plant tolerance." Journal of Wildlife Management 62(4): 1165-1183.	Review
Bardgett, R. D. and R. Cook (1998). "Functional aspects of soil animal diversity in agricultural grasslands." Applied Soil Ecology 10(3): 263-276.	Review
Bardgett, R. D., D. A. Wardle, et al. (1998). "Linking above-ground and below-ground interactions: how plant responses to foliar herbivory influence soil organisms." Soil Biology and Biochemistry 30(14): 1867-1878.	Review
Beddows, A. R. (1959). "Dactylis glomerata L." The Journal of Ecology 47(1): 223-239.	Review
Beddows, A. R. (1961). "Holcus lanatus L." The Journal of Ecology 49(2): 421-430.	Review
Brys, R., H. Jacquemyn, et al. (2004). "The effects of grassland management on plant performance and demography in the perennial herb <i>Primula veris</i> ." Journal of Applied Ecology 41(6): 1080-1091.	Site comparison- single species focus
Bullock, J. M. and R. F. Pywell (2005). "Rhinanthus: A tool for restoring diverse Grassland?" Folia Geobotanica 40(2-3): 273-288.	Review
Burdon, J. J. (1983). "Trifolium Repens L." The Journal of Ecology 71(1): 307-330.	Review
Casler, M. D. and E. van Santen (2001). "Performance of meadow fescue accessions under management- intensive grazing." Crop Science 41(6): 1946-1953.	Review
Casler, M. D., D. J. Undersander, et al. (1998). "An on-farm test of perennial forage grass varieties under management intensive grazing." Journal of Production Agriculture 11(1): 92-99.	Review
Critchley, C. N. R., M. J. W. Burke, et al. (2004). "Conservation of lowland semi-natural grasslands in the UK: a review of botanical monitoring results from agri-	Review

- environment schemes." *Biological Conservation* 115(2): 263-278.
- Crofts, A., and Jefferson, R.G. (1999) *The lowland grassland handbook*. 2nd edition. EN/WTs, UK. Review
- Ejrns, R. and H. H. Bruun (1995). "Prediction of grassland quality for environmental management." *Journal of Environmental Management* 43(2): 171-183. Review
- Gibson, C.W.D. 1996 *The effects of horse grazing on species-rich grasslands*. Peterborough. English Nature Research Reports 164 Survey
- Gibson, C.W.D. 1997 *The effects of horse and cattle grazing on English species-rich grasslands*. Peterborough. English Nature Research Reports 210 Survey
- Harper, J. L. (1957). "*Ranunculus Acris* L." *The Journal of Ecology* 45(1): 289-342. Review
- Harper, J. L. and W. A. Wood (1957). "*Senecio Jacobaea* L." *The Journal of Ecology* 45(2): 617-637. Review
- Hellström, K., A.-P. Huhta, et al. (2003). "Use of sheep grazing in the restoration of semi-natural meadows in northern Finland." *Applied Vegetation Science* 6(1): 45-52. Site comparison-mesic meadow
- Jantunen, J., K. Saarinen, et al. (2002). "A comparison of vegetation in grazed, formerly grazed and ungrazed valuable semi-natural grasslands in SE Finland." *Memoranda Societatis pro Fauna et Flora Fennica* 78(2): 55-61. Site comparison-mesic meadow
- Jones, D. A. and R. Turkington (1986). "*Lotus Corniculatus* L." *The Journal of Ecology* 74(4): 1185-1212. Review
- Kruess, A. and T. Tschardtke (2002). "Contrasting responses of plant and insect diversity to variation in grazing intensity." *Biological Conservation* 106(3): 293-302. Site comparison-mesic meadow
- Lodge, R. W. (1959). "*Cynosurus Cristatus* L." *The Journal of Ecology* 47(2): 511-518. Review
- Luoto, M., J. Pykala, et al. (2003). "Decline of landscape-scale habitat and species diversity after the end of cattle grazing." *Journal for Nature Conservation* 11(3): 171-178. Site comparison-mesic meadow
- Luoto, M., S. Rekolainen, et al. (2003). "Loss of Plant Species Richness and Habitat Connectivity in Grasslands Associated with Agricultural Change in Finland." *Ambio* 32(7): 447-452. Site comparison-mesic meadow
- Part, T., and Soderstrom, B. (1999) Conservation value of semi-natural pastures in Sweden: contrasting botanical and avian measures. *Conservation biology* 13, 755-765. Survey
- Pfitzenmeyer, C. D. C. (1962). "*Arrhenatherum Elatius* (L.) J. & C. Presl (A. *Avenaceum* Beauv.)." *The Journal of Ecology* 50(1): 235-245. Review
- Putman, R. J., A. D. Fowler, et al. (1991). "Patterns of Use of Ancient Grassland by Cattle and Horses and Effects on Vegetational Composition and Structure." *Biological Conservation* 56(3): 329-347. Site comparison-MG4
- Pykala, J. (2005). "Plant species responses to cattle grazing in mesic semi-natural grassland." *Agriculture, Ecosystems &* Replicated Site comparison-mesic

Environment 108(2): 109-117.	meadow
Pykälä?, J. (2003). "Effects of restoration with cattle grazing on plant species composition and richness of semi-natural grasslands." <i>Biodiversity and Conservation</i> 12(11): 2211-2226.	Replicated Site comparison-mesic meadow
Pykälä?, J. (2005). "Cattle grazing increases plant species richness of most species trait groups in mesic semi-natural grasslands." <i>Plant Ecology</i> 175(2): 217-226.	Replicated Site comparison-mesic meadow
Richards, P. W. and A. R. Clapham (1941). "Juncus Effusus L. (<i>Juncus Communis</i> β <i>effusus</i> E. Mey)." <i>The Journal of Ecology</i> 29(2): 375-380.	Review
<i>Roberts, R.A. (1928) The composition of old pastures of high reputation in Wales. Welsh Journal of Agriculture</i> 4: 170-183.	Site comparison-MG5
Rodwell, J. S. (1992). <i>British plant communities. Volume 3: grasslands and montane communities.</i>	Review
Rook, A. J., B. Dumont, et al. (2004). "Matching type of livestock to desired biodiversity outcomes in pastures - a review." <i>Biological Conservation</i> 119(2): 137-150.	Review
Rosignol, N., A. Bonis, et al. (2006) "Consequence of grazing pattern and vegetation structure on the spatial variations of net N mineralisation in a wet grassland." <i>Applied Soil Ecology</i> 31 (1-2) 62-72.	Site comparison-mesic grassland
Tallowin, J.R.B.T. (1997) <i>The agricultural productivity of lowland semi-natural grasslands: a review.</i> English Nature Research Reports, No. 233. English Nature, Peterborough.	Review
Wagner, F. and R. Luick (2005). "Extensive grazing and normative nature conservation on grasslands - Is it possible to change from mowing to extensive grazing on SHD grassland without loss of species?"	Site comparison-mesic grassland
<i>Warren, J., A. Christal, et al. (2002). "Effects of sowing and management on vegetation succession during grassland habitat restoration." Agriculture, Ecosystems & Environment</i> 93(1-3): 393-402.	Controlled Trial-MG5 restoration
Westbury, D. B. (2004). "Rhinanthus minor L." <i>Journal of Ecology</i> 92(5): 906-927.	Review

Characteristics of excluded studies viewed at full text

Study	Characteristics
ADAS 2004 Upland hay meadows in the pennine Dales ESA: Vegetation change between 1987 and 2002 and its relation with management practices and soil properties	Wrong subject
ADAS, 1998. Environmental Monitoring in the Upper Thames Tributaries ESA; 1994–1997. ADAS report to the Ministry of Agriculture, Fisheries and Food.	Wrong intervention
Alder, F. E. (1970). "Comparative Studies of Perennial Ryegrass, Timothy and Meadow Fescue .2. Results Obtained in Grazing Experiments." <i>Journal of the British Grassland Society</i> 25(1): 53-&.	Wrong subject
Anderson, V.J. and Briske, D.D. (1995) Herbivore-induced species replacement in grasslands: is it driven by herbivory tolerance or avoidance? <i>Ecological applications</i> 5: 1014-1024.	Wrong subject
Ash, H. J., R. Bennett, et al. (1992). <i>Flowers in the grass: creating and managing grasslands with wild flowers.</i> , English Nature (EN). Publicity And Marketing Branch	Wrong intervention
Bayliss, J. L., V. Simonite, et al. (2005). "The use of probabilistic habitat suitability models for biodiversity action planning." <i>Agriculture, Ecosystems & Environment</i> 108(3): 228-250.	Wrong intervention
Bayliss, J., A. Helyar, et al. (2003). "A multi-criteria targeting approach to neutral grassland conservation." <i>Journal of Environmental Management</i> 67(2): 145-160.	Wrong intervention
Berendse, F., Oomes, M.J.M., Altena, H.J., Elberse, W.Th., 1992. Experiments on the restoration of species-rich meadows in the Netherlands. <i>Biological Conservation</i> 62, 59–65.	Wrong intervention
Blackstock, T. H., C. A. Rimes, et al. (1999). "The extent of semi-natural grassland communities in lowland England and Wales: A review of conservation surveys 1978-96." <i>Grass and Forage Science</i> 54(1): 1-18.	Wrong intervention
Buhler, C. and B. Schmid (2001). "The influence of management regime and altitude on the population structure of <i>Succisa pratensis</i> : implications for vegetation monitoring." <i>Journal of Applied Ecology</i> 38(4): 689-698.	Wrong subject
Bullock, J. M., J. Franklin, et al. (2001). "A plant trait analysis of responses to grazing in a long-term experiment." <i>Journal of Applied Ecology</i> 38(2): 253-267.	Wrong subject
Cuomo, G. J., D. G. Johnson, et al. (1999). "Pasture renovation and grazing management impacts on cool- season grass pastures." <i>Journal of Production Agriculture</i> 12(4): 564-569.	Wrong subject
Davies, A. (1998). "Pasture research in the UK: Present knowledge and future prospects." <i>Canadian Journal of Plant Science</i> 78(2): 211-216.	Wrong subject
Di Giulio, M., E. Meister, et al. (2001). "Enhancing insect diversity in agricultural grasslands: The roles of management and landscape structure." <i>Journal of Applied Ecology</i> 38(2): 310-319.	Wrong subject

E. Duffey, M.G. Morris, J. Sheil, L.K. Ward, D.A. Wells and T.C.E. Wells, Grassland ecology and wildlife management, Chapman & Hall, London (1974).	Wrong subject
Fenton, E. W. (1931). "A Botanical Survey of Grasslands in the South and East of Scotland." <i>The Journal of Ecology</i> 19(2): 392-409.	Wrong subject
Fenton, E. W. (1931). "The Influence of Sectional Grazing and Manuring on the Flora of Grassland." <i>The Journal of Ecology</i> 19(1): 75-97.	Wrong subject
Fischer, M. and S. Wipf (2002). "Effect of low-intensity grazing on the species-rich vegetation of traditionally mown subalpine meadows." <i>Biological Conservation</i> 104(1): 1-11.	Wrong subject
Fisher, G. E. J., L. J. Baker, et al. (1996). "Herbage production from swards containing a range of grass, forb and clover species and under extensive management." <i>Grass and forage science</i> 51(1): 58-72.	Wrong intervention
Frankow-Lindberg, B. E., K. Svanang, et al. (1997). "Effects of an autumn defoliation on overwintering, spring growth and yield of a white clover grass sward." <i>Grass and Forage Science</i> 52(4): 360-369.	Wrong subject
Freckman, D. W., Duncan, D. A. and Larson, J. R., 1979. Nematode density and biomass in an annual grassland ecosystem. <i>Journal of Range Management</i> 32, pp. 418-422	Wrong subject
Fuller, R. J. and S. J. Gough (1999). "Changes in sheep numbers in Britain: implications for bird populations." <i>Biological Conservation</i> 91(1): 73-89.	Wrong subject
Fuller, R.M. (1987) The changing extent and conservation interest of lowland grasslands in England and Wales: a review of grassland surveys 1930-84. <i>Biological Conservation</i> 40, 281-300.	Wrong intervention
Gooding, R. F. and J. Frame (1997). "Effects of continuous sheep stocking and strategic rest periods on the sward characteristics of binary perennial grass white clover associations." <i>Grass and Forage Science</i> 52(4): 350-359.	Wrong subject
Haines-Young, R., C. J. Barr, et al. (2003). "Changing landscapes, habitats and vegetation diversity across Great Britain." <i>Journal of Environmental Management</i> 67(3): 267-281.	Wrong subject
Hansson, M. and H. Fogelfors (2000). "Management of a semi-natural grassland; results from a 15-year-old experiment in southern Sweden." <i>Journal of Vegetation Science</i> 11(1): 31-38.	Wrong subject
Hayes, M.J., Sackville Hamilton, N.R., 2001. The effect of sward management on the restoration of species-rich grassland: a reassessment of IGER s grassland restoration experiment, Trawsgoed. Countryside Council for Wales Contract Science Report No.438, Bangor.	Wrong subject
Hodgson and Illius (eds) <i>The ecology and management of grazing systems</i> , CAB, UK.	Wrong subject
Hodgson, J. G., G. Montserrat-Martí, et al. (2005). "How much will it cost to save grassland diversity?" <i>Biological Conservation</i> 122(2): 263-273.	Wrong intervention

Hodgson, J. G., J. P. Grime, et al. (2005). "The impacts of agricultural change (1963-2003) on the grassland flora of Central England: processes and prospects." <i>Basic and Applied Ecology</i> 6(2): 107-118.	Wrong intervention
Hopkins, A., R. F. Pywell, et al. (1999). "Enhancement of botanical diversity of permanent grassland and impact on hay production in Environmentally Sensitive Areas in the UK." <i>Grass and forage science</i> 54(2): 163-173.	Wrong intervention
Hopkins, J.J. (1990) British Meadows and pastures. <i>British Wildlife</i> 1, 202-213.	Wrong intervention
Hulina, N. (1984). "Influence of grazing on the floristic composition and structure of the grassland." <i>Acta botanica Croatica</i> 43: 295-299.	Wrong subject
Jones (1933) Grassland management and its influence on the sward. <i>Journal of the Royal Agricultural society of England</i> 94, 21-41.	Wrong intervention
Kydd, D. D. (1964). "The Effect of Different Systems of Cattle Grazing on the Botanical Composition of Permanent Downland Pasture." <i>The Journal of Ecology</i> 52(1): 139-149.	Wrong subject
Le Roux, X., M. Bardy, et al. (2003). "Stimulation of soil nitrification and denitrification by grazing in grasslands: Do changes in plant species composition matter?" <i>Oecologia</i> 137(3): 417-425.	Wrong subject
Lindborg, R. and O. Eriksson (2004). "Effects of restoration on plant species richness and composition in Scandinavian semi-natural grasslands." <i>Restoration Ecology</i> 12(3): 318-326.	Wrong subject
Lithner, S. (2005). "Resuming management in abandoned grasslands - An example from Blekinge	Wrong subject
Lopez-Marino, A., E. Luis-Calabuig, et al. (2000). "Floristic composition of established vegetation and the soil seed bank in pasture communities under different traditional management regimes." <i>Agriculture, ecosystems & environment</i> 78(3): 273-282.	Wrong subject
Menner, J. C., S. Ledgard, et al. (2004). "The Impact of Grazing Animals on N ₂ Fixation in Legume-Based Pastures and Management Options for Improvement	Wrong subject
Milchunas, D. G. and W. K. Lauenroth (1993). "Quantitative Effects of Grazing on Vegetation and Soils Over a Global Range of Environments." <i>Ecological Monographs</i> 63(4): 327-366.	Wrong subject
Morton Boyd, J. 1960. Studies of the differences between the fauna of grazed and ungrazed grassland in Tiree, Argyll. <i>Proceedings of Zoological Society of London</i> 135:33 54.	Wrong subject
Muller, S. (2002). "Appropriate agricultural management practices required to ensure conservation and biodiversity of environmentally sensitive grassland sites designated under Natura 2000." <i>Agriculture, Ecosystems & Environment</i> 89(3): 261-266.	Wrong subject
Muller, S. (2002). "Diversity of management practices required to ensure conservation of rare and locally threatened plant species in grasslands: A case study at a regional scale (Lorraine, France)." <i>Biodiversity and Conservation</i> 11(7): 1173-1184.	Wrong subject

Neilson, R., D. Robinson, et al. (2002). "Above-ground grazing affects floristic composition and modifies soil trophic interactions." <i>Soil Biology and Biochemistry</i> 34(10): 1507-1512.	Wrong subject
Newton, A. C., L. M. Davy, et al. (2003). "Status, distribution and definition of mycologically important grasslands in Scotland." <i>Biological Conservation</i> 111(1): 11-23.	Wrong intervention
Oates, M.R. and Bullock, D.J. (1997) <i>Browsers and grazers</i> . <i>Enact</i> 5 (4) 15-18.	Wrong subject
Pakeman, R. J. (2004). "Consistency of plant species and trait responses to grazing along a productivity gradient: A multi-site analysis." <i>Journal of Ecology</i> 92(5): 893-905.	Wrong subject
Petersen, H., E. Jucevica, et al. (2004). "Long-term changes in collembolan communities in grazed and non-grazed abandoned arable fields in Denmark." <i>Pedobiologia</i> 48(5-6): 559-573.	Wrong subject
Pietola, L., R. Horn, et al. (2005). "Effects of trampling by cattle on the hydraulic and mechanical properties of soil." <i>Soil and Tillage Research</i> 82(1): 99-108.	Wrong subject
Pozzi, S. and D. Borcard (2001). "Effects of dry grassland management on spider (arachnida: Araneae) communities on the Swiss occidental plateau." <i>Ecoscience</i> 8(1): 32-44.	Wrong subject
Proulx, M. and A. Mazumder (1998). "Reversal of grazing impact on plant species richness in nutrient-poor vs. nutrient-rich ecosystems." <i>Ecology</i> 79(8): 2581-2592.	Wrong subject
Pykala, J., M. Luoto, et al. (2005). "Plant species richness and persistence of rare plants in abandoned semi-natural grasslands in northern Europe." <i>Basic and Applied Ecology</i> 6(1): 25-33.	Wrong intervention
Pywell, R. F., J. M. Bullock, et al. (2002). "Restoration of species-rich grassland on arable land: Assessing the limiting processes using a multi-site experiment." <i>Journal of Applied Ecology</i> 39(2): 294-309.	Wrong intervention
Rochon, J. J., C. J. Doyle, et al. (2004). "Grazing legumes in Europe: a review of their status, management, benefits, research needs and future prospects." <i>Grass and Forage Science</i> 59(3): 197-214.	Wrong subject
Rosen, E. and J. P. Bakker (2005). "Effects of agri-environment schemes on scrub clearance, livestock grazing and plant diversity in a low-intensity farming system on Oland, Sweden." <i>Basic and Applied Ecology</i> 6(2): 195-204.	Wrong subject
Seastedt, T. R., Ramundo, R. A. and Hayes, D. C., 1988. Maximization of densities of soil animals by foliage herbivory: empirical evidence, graphical and conceptual models. <i>Oikos</i> 51, pp. 243-248	Wrong subject
Simán, S. and T. Lennartsson (1998). "Optimizing management in seminatural grasslands - an empirical study comparing mowing and grazing <i>Svensk Botanisk Tidskrift</i> 92(4): 199-210. {a} Inst. Naturvardsbiol., SLU, Box 7002, SE-750 07 Uppsala, Sweden	Wrong subject
Smith, R. S. and S. P. Rushton (1994). "The Effects of Grazing Management on the Vegetation of Mesotrophic (Meadow) Grassland in Northern England." <i>Journal of Applied Ecology</i> 31(1): 13-24.	Wrong subject

Smith, R. S., P. Corkhill, et al. (1996). "The conservation management of mesotrophic (meadow) grassland in Northern England .2. Effects of grazing, cutting date, fertilizer and seed application on the vegetation of an agriculturally improved sward." <i>Grass and Forage Science</i> 51(3): 292-305.	Wrong subject
Smith, R. S., S. Pullan, et al. (1996). "Seed shed in the making of hay from mesotrophic grassland in a field in northern England: Effects of hay cut date, grazing and fertilizer in a split-split-plot experiment." <i>Journal of Applied Ecology</i> 33(4): 833-841.	Wrong subject
Smith, R.S., Shiel, R.S., Millward, D. & Corkhill, P. (2000)The interactive effects of management on the productivity and plant community structure of an upland meadow: an 8-year field trial. <i>Journal of Applied Ecology</i> , 37, 1029–1043.	Wrong subject
Somodi, I., K. Virágh, et al. (2004). "The effect of the abandonment of grazing on the mosaic of vegetation patches in a temperate grassland area in Hungary." <i>Ecological Complexity</i> 1(2): 177-189.	Wrong subject
Svenning, J.-C. (2002). "A review of natural vegetation openness in north-western Europe." <i>Biological Conservation</i> 104(2): 133-148.	Wrong subject
T, A. G. (1937). "Welsh Grasslands." <i>The Journal of Ecology</i> 25(1): 262-264.	Wrong subject
Taylor, W. P. (1936). "Some Effects of Animals on Plants." <i>The Scientific Monthly</i> 43(3): 262-271.	Wrong subject
Twerdoff, D. A., D. S. Chanaszyk, et al. (1999). "Impacts of forage grazing and cultivation on near-surface relative compaction." <i>Canadian Journal of Soil Science</i> 79(3): 465-471.	Wrong subject
Verhulst, J., D. Kleijn, et al. (2004). "Relationship between land-use intensity and species richness and abundance of birds in Hungary." <i>Agriculture, Ecosystems and Environment</i> 104(3): 465-473.	Wrong subject
Walker, K. J., J. O. Mountford, et al. (2004). "The restoration and re-creation of species-rich lowland grassland on land formerly managed for intensive agriculture in the UK." <i>Biological Conservation</i> 119(1): 1-18.	Wrong intervention
Watkinson, A. R. and S. J. Ormerod (2001). "Grasslands, grazing and biodiversity: Editors' introduction." <i>Journal of Applied Ecology</i> 38(2): 233-237.	Wrong subject
Watt, A. S. (1981). "A Comparison of Grazed and Ungrazed Grassland A in East Anglian Breckland." <i>The Journal of Ecology</i> 69(2): 499-508.	Wrong subject
Watt, A. S. (1981). "Further Observations on the Effects of Excluding Rabbits from Grassland A in East Anglian Breckland: The Pattern of Change and Factors Affecting it (1936-73)." <i>The Journal of Ecology</i> 69(2): 509-536.	Wrong subject
White, T. A., D. J. Barker, et al. (2004). "Vegetation diversity, growth, quality and decomposition in managed grasslands." <i>Agriculture, Ecosystems & Environment</i> 101(1): 73-84.	Wrong subject

Wilberforce, E. M., G. W. Griffith, et al. (2003). "Agricultural management affects communities of culturable root-endophytic fungi in temperate grasslands." *Soil Biology and Biochemistry* 35(8): 1143-1154.

Wrong subject