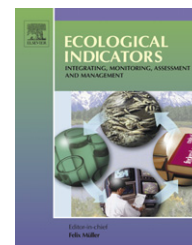


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Developing biodiversity indicator to design efficient agri-environmental schemes for extensively used grassland

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ABSTRACT

Agri-environmental measures are among the most important instruments for the promotion of environmentally adapted agricultural land use. While their pertinence in Europe has been increasing for some years, evaluations of these measures have shown that their design is still lacking in both effectiveness and efficiency. This paper describes the derivation of indicator plant species that make it possible to implement result-oriented remuneration schemes in the grassland sector. In many ways, result-oriented agri-environmental schemes can be expected to prove superior to the measure-oriented schemes which are currently most widely used.

It is demonstrated how a checklist of indicator species can be derived by using expert knowledge and statistical crosschecks with a database of pre-existing vegetation samples. These species are indicators for conservationally relevant, agriculturally usable grassland on moderately dry to moderately wet sites. The qualities that make a site eligible for remuneration are defined by societal demand as expressed through political objectives and guidelines. One of the challenges in deriving an indicator checklist was to represent quality through species that not only satisfy scientific criteria like validity, but are also operational within remuneration programmes. For example, operational indicator species have to be easily identifiable. The checklist of indicator species for result-oriented remuneration in the Land Brandenburg presented here covers the entire spectrum of site conditions and all types of usable grassland in Brandenburg.

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1. Introduction

The relevance of agri-environmental measures in Europe has been continuously increasing over the last few years, not least because of the payments made available through the so-called second pillar of EU agricultural policy. With the help of agri-environmental measures, farmers voluntarily commit them-

selves to especially environment-friendly methods of agriculture or to measures of landscape maintenance, and are rewarded with an additional premium. Agri-environmental measures are a mandatory component of rural development programmes and are considered to be an important instrument especially in the implementation of the Habitat Directive (COM, 2000a).

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In 2001, agri-environmental measures were conducted on approx. 19.3 million ha (COM, 2003). The expenditure for agri-environmental measures in the grassland sector play a crucial role, especially in Germany (Osterburg and Stratmann, 2002).

However, systematic evaluations realised in recent years (see COM, 2000b, 2002) have shown that the measures partly fail to achieve the desired results, and in any case can at least be improved in terms of their effectiveness (Kleijn et al., 2006, 2001; Kleijn and Sutherland, 2003; COM, 2004; Matzdorf et al., 2003). Finally, this is due to the fact that most measures are so-called horizontal extensification measures. Horizontal schemes tend to include a large number of farmers, cover a wide area, make relatively modest demands on farmers' practices, and pay correspondingly little for the environmental service provided. Target schemes tend to be targeted on site-specific environmental issues, therefore include fewer farmers, make more substantial demands on the farmers, and pay correspondingly more for the environmental service provided (COM, 2005).

The lack of spatial equivalence of horizontal agri-environmental schemes in particular is one of the main causes of effectiveness deficits (cf. Piorr and Matzdorf, 2004). An analysis of the agri-environmental measures of the Land Brandenburg shows the proportion of horizontal to targeted measures (see Fig. 1).

One way to improve spatial equivalence is the setting up of locally specific application areas of the kind used in the environmentally sensitive areas (ESA) approach in the United Kingdom. However, such locally specific application areas entail public transaction costs (Falconer et al., 2001; Rodgers and Bishop, 1999) and often meet with resistance from the competent administrative bodies. In fact, centrally prescribed application areas are often ineffective, especially with a view to species and habitat diversity, because they cannot take into account the entire range of site conditions.

Another way of making agri-environmental measures both more effective and efficient is result-oriented remuneration. Result-oriented payments are directly linked to the desired ecological good or environmental objective (Gerowitt et al., 2003; Matzdorf, 2004a). For example, a farmer may receive payments for a 'species-rich wet meadow'. Measure-oriented payments are linked to measures that lead to the production of ecological goods. In this case, the farmer may receive payments for refraining from manuring his meadow and for mowing it only once a year, at the end of June. From an economic point of view, the crucial property of result-oriented remuneration is that the farmer can make his own choice. It is entirely up to him how he manages his meadows (in keeping with legal regulations), as long as the species-rich meadow is produced.

Consequently, the farmer's attention turns to the result, the product of his work. Result-oriented remuneration has a number of potential efficiency advantages over measure-oriented remuneration, resulting from farmers' increased personal interest in discovering more efficient methods for achieving the environmental objectives. When remuneration is linked to results, farmers for the first time see environmental objectives as environmental goods they are paid to produce, and incorporate them into their economic calculation.

Thus, the advantages go beyond the fact that farmers decentrally select the most appropriate (sensitive) areas; they also enjoy greater flexibility in choosing methods for achieving environmental objectives, and their choice is determined by their individual rational decision calculation. For these reasons, result-oriented remuneration is considered to have many advantages which, however, cannot be discussed here in detail. Result-oriented remuneration prompts farmers to pursue environmental objectives for their own benefit, increases innovation potential, reduces information asymmetries (in economics, information asymmetry occurs when

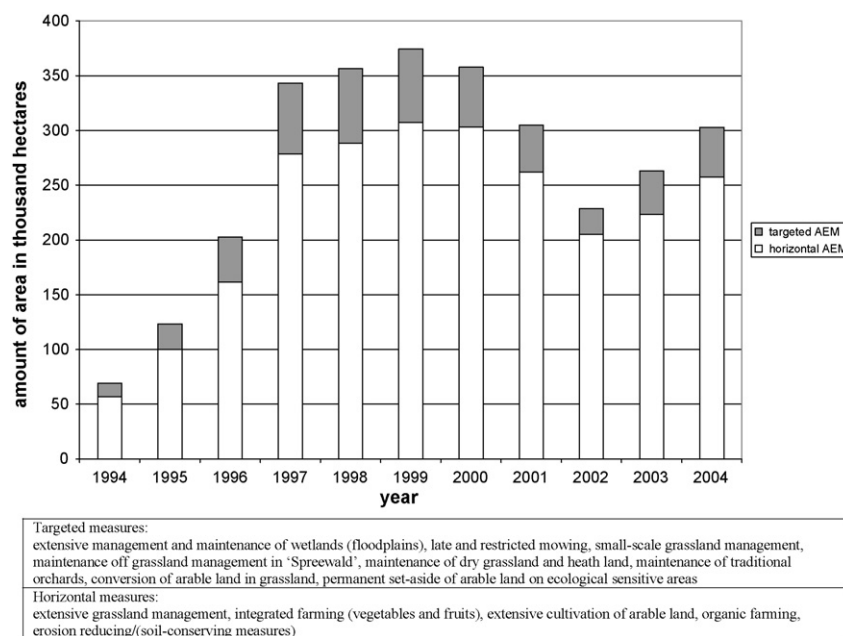


Fig. 1 – Proportion of horizontal to targeted agri-environmental measures in Brandenburg, Germany. Source of data: LVLf (2004).

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