AN EXPERIMENT WITH PAYING FOR CONSERVATION RESULTTS CONCERNING DITCH BANK VEGETATIONS IN THE WESTERN PEAT DISTRICT OF THE NETHERLANDS

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ABSTRACT

A system of paying farmers for conservation results is put forward as an additional system to the Dutch Environmentally Sensitive Areas scheme. This new scheme is called "nature production payments". The aim is to pay farmers for conservation results without prescribing specific rules for the management. Such a system has a strong appeal to the farmer as an entrepreneur, using his craftmanship and creativity. For nature conservation bodies, the system is considered "good value for less money". In order to make the scheme operational, 1) it must have a clear definition of the "product", 2) the measurement of the product (by the farmer) must be easy, 3) the returns must be easy to check and 4) it should provide fair prices to encourage the farmer to take part. To develop such a system an experiment has been carried out, focussing on the way the "nature poduction" was monitored. The results show that such a system is feasible and has much support from both farmers and nature conservationists.

INTRODUCTION

The typical Dutch polder landscape can be found mainly in the peat areas in the western and northern part of the Netherlands. Because of the relatively wet soils, the agricultural use in these areas is mainly restricted to dairy farming. The dairy farming practice in the Netherlands is, although getting more extensive in recent years, still very intensive (Clausman & Melman, 1991), causing among others a severe decline in the plant species diversity of the grasslands and ditch banks (Van Strien, 1991). Nevertheless, botanical conservation and modern dairy farming could be combined (see Twisk *et al.* elsewhere in this issue), in particular if farmers are left free to take their own conservation measures and rewarded for their conservation results.

NATURE CONSERVATION IN RURAL AREAS

Until recently, nature conservation measures in the rural areas usually consist of reducing the agricultural intensity. The approach is based on the assumption that only traditional, more extensive farming practices will benefit wildlife. In other words: modern agriculture and nature conservation are fundamentally conflicting activities (Reyrink, 1988) and therefore have to be separated from each other. In this conservation strategy, small nature reserves are set aside and, due to the high costs, only in a limited (designated) area farmers are financially compensated for loss of income due to *restrictions* on their farm management (see Melman elsewhere in this issue). This kind of measure has been implemented in other European countries as well (Mathers & Woods, 1989).

Although this system of *'payments for means to farmers'* has its advantages (like "everybody knows what he is in for"), it has important disadvantages too (Van Strien *et al.*, 1988; Van Paassen *et al.*, 1991):

- the relation between means and results is not always clear;
- the compensations vary in a limited range, i.e. not all possible extra efforts of farmers are rewarded. Knowledge and craftmanship of the farmer concerning conservation are not used;
- the prescribed means often do not fit into the farm management. This goes for both technical and psychological aspects of farming;
- not all means can be described unambigiously and/or checked.

Because of these (and other) disadvantages, many farmers have a resistance towards management agreements prescribing restrictions in their farm management. Therefore less farmers implement conservation measures on their farms than may be desired. This is a reason to develop more stimulating instruments (also see Melman elsewhere in this issue).

NATURE PRODUCTION PAYMENTS SCHEME

The general idea for a new instrument for nature conservation on modern farms is to pay for the amount of nature the farmer "produces", e.g. rare plant- or bird species. Regulations of this type were first proposed in the Netherlands by De Meijere (1979), and more recently new attention has been paid to this idea by Van Strien *et al.* (1988) and Van Paassen *et al.* (1991). The main advantages of such an approach are that the farmer is considered as a producer and is paid for positive results and not for omitting things, the payment is only for concrete results and not for creating conditions and there are no fixed prescriptions, so that the farmer is able to bring in his own skill and creativity.

Since the introduction of the idea it has been applied in the Netherlands on a small scale for a few threatened species (such as Barn owl (*Tyto alba*) and Swallow (*Hirundo rustica*). In the English Peak District such a system has been used for threatened plant species (Van Paassen *et al.*, 1991). These applications appear to be reasonably successful, as farmers often become more motivated for and active in nature conservation on their farm. To stimulate agricultural nature management it seems useful to investigate if the system can be applied to other conservation values as well. To achieve nature conservation goals like preservation of species, the system should be applied on a large scale. Research is needed to find out if the system is feasible on such a scale. For the system to work, it is necessary that:

- there is sufficient knowledge about the possibilities for nature conservation on modern farms and there are sufficient facilities for farmers to obtain this information;
- there is a method for measuring the nature production results (in order to be able to reward the conservation results). If applied on a larger scale, the measurements should ideally be done by the farmers themselves to lower the costs. In that case it also should be possible to inspect the famers' returns, in order to be sure that his measurements are in accordance with the real situation. Furthermore there has to be a way to see of no fraud is being committed;
- there are fair prices for the nature products. Too low product prices will not be stimulating, too high prices will lead to high costs or - with a limited budget - to application on a small area only.

All these points will determine the feasibility of the system as

well as the enthusiasm of farmers for the system, the conservation measures they will take and thus the results which may be reached. It is necessary to investigate the feasibility for every nature aspect one wishes to apply the system to. If there are severe an insuperable problems beforehand, one should abandon the idea. However, if there are only technical probelems to be expected which cannot be considered insuperable beforehand, then these should be the object of research.

FEASIBILITY FOR DITCH BANK VEGEATION

An experiment

To investigate if the nature prodcution payments scheme is feasible for ditch bank vegetation an experiment was set up to test the system. The experiment was started in 1992 and will continue to 1995. A (more or less) similar experiment for meadow birds was started in 1993. It is a cooperative experiment between the Dutch Farmers Organization, the South Hollandish Environmental Federation and the Department of Environmental Biology at Leiden. The experiment was financed by the provincial and national government bodies. The Bureau for Land Management of the Dutch Ministry of Agriculture in 1993 also started an experiment with the management of field margins, in which certain aspects of a nature production scheme are studied as well (see Melman elsewhere in this issue).

Design of the experiment

The most important questions of the experiment are:

1. How can a farmer produce a species-rich ditch bank vegetation?
2. How can the nature production easily be measured and checked?
3. Which rewards should be given per unit of product?
4. To which conservation results will the application of a system of nature production payments eventually lead?

The emphasis in the first two years of the experiment was laid on adequate measurement and inspection techniques for the nature production. This was because most doubts on the system are centred on these issues (Van Paassen *et al.*, 1991). For answering questions 3 and 4 we plan to use the results of the nature management of the farmers during the experiment. Because the ditch bank vegetation changes only slowly when the management is changed, this means that we cannot yet answer these questions. We will therefore restrict the discussion on the experiment in this paper to questions 1 and 2.

The experiment is carried out in the western peat district of the Netherlands. Ten farmers joined the experiment, with about 65 kilometers of ditch banks. They received a small, fixed sum of money for joining the experiment. No rewards according to the produced amount of nature were given yet, for one of the very aims of the experiment is to determine the right product prices. Another ten 'control' farmers without any nature management were invited to join the experiment to compare the nature results. Previous to the experiment a measurement and inspection technique was developed. These techniques were tested in practice and adapted during the course of the experiment.

Nature production

Much information is already available in the Netherlands on how to produce species-rich ditch banks combined with modern farming (Van

Strien, 1991). However, every farm is different and therefore this general information has to be translated to specific situations. On-site advice is necessary in order to meet the specific requirements and conditions and possibilities of the farm(er). In the experiment farmers and investigators together have tried and (if necessary) adapted different nature production methods. We measured the quantity of manure and fertilizer applied in the ditch banks for example and lowered this (if required) by changing the distance of the tractor to the ditch. In order to help the famers in their nature production, the participating farmers also had the possibility to buy new equipment with a 50% subsidy.

Nature production measurements

An average dairy farm in the peat district has about 10 kilometers of ditch banks, containing 40-70 plant species on average. A survey of all these plants on the whole length of dicht banks would require a lot of knowledge and a tremendous amount of time. Therefore, we developed a system which requires only a sample of the banks per field to be surveyed. In that part, the farmer had to score the presence (or absence) of about fifteen conspicious and easily recognizable plant species. These are indicator species, the presence of which indicates a species rich vegetation and the absence for a species poor vegetation (Jansen *et al.*, 1990 and in prep.). The more indicator species present, the higher the botanical value (expressed as the "nature-value index") of the vegetation figure 1). The nature-value index is a measure for the floristic richness which is based on the regional, national and world rarity of the plant species as well as the rate of decline of the species, taking into account the cover percentages (Clausman & Van Wijngaarden, 1984). Examples of the used indicator species are Ragged Robin (*Lychnis flos-cuculi*), Marsh-marigold (*Caltha palustris*) and Yellow flag (*Iris pseudacorus*).

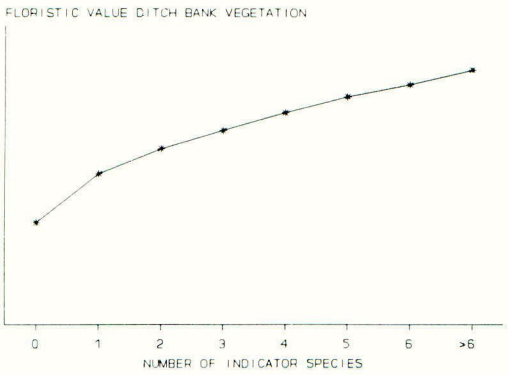

FIGURE 1. The relationship between the number of indicator plant species and the floristic value (see text) of the vegetation of the whole ditch bank.

The scores of the farmers were checked by the investigators. The total difference between the scores was 7% in the first year, which is quite low (table 1). However, farmers relatively often thought that some species were absent while in fact they were present (according to the investigators). For this reason, we added some indicator species and

omitted other ones, because they appeared not to be conspicious or recognizable enough for the famers. The knowledge of the farmers was enlarged by organizing a field excursion at the start of the second year, during which we familiarized them with most of the plant species. When we look at results of the second year (table 1), we can see that the farmers missed the indicator species less often.

TABLE 1. The agreement and disagreement (italic) of the presence and absence of indicator species according to the farmers and the investigators.

Investigators → / Farmers ↓	Year	Species absent	Species present	Total	Total level of disagreements
Species absent	1992	2026 (96%)	*67 (26%)*	2093	
	1993	1791 (96%)	*48 (11%)*	1839	
Species present	1992	*89 (4%)*	195 (74%)	284	
	1993	*81 (4%)*	395 (89%)	476	
Total	1992	2115 (100%)	262 (100%)	2377	*89+67/2377 = 7%*
	1993	1872 (100%)	443 (100%)	2315	*81+48/2315 = 6%*

When we evaluated the measuring method with the farmers, they all were confident about it. All participating farmers found the monitoring "nice to do". Most of them got also more interested in their "product" and wanted to know more about other plant species as well. All participants found the time they needed for the survey (2-8 hours, depending on the farm size) acceptable, and even were prepared to spend more time if necessary.

Inspection method

As public money will be spent in the system, a certain degree of control of the farmers' returns will be required. To check the returns of the nature production, a minimum number of "agreements" is required by which the farmers should stand. These "agreements" are meant to minimise the difference between the farmer's returns and the inspection and to carry out this inspection is fast and simple. The agreements we made were:

- the returns had to be sent to the inspection agency at the last day of the monitoring and at the same date the farmer had to phone to say that he had sent in his returns;
- every part of the ditch bank he had surveyed should be marked with two garden canes we supplied;
- the vegetation should not be mown or grazed for one week, or until the day of inspection.

In the first year some mistakes were made by the farmers: not all surveyed parts of the ditches were marked, hampering the inspection. In the

second year, however, the marking of the plots was omitted only twice in 162 cases. Not one of the farmers had any problems with the agreement that the vegetation should not be mown or grazed during a week.

In consultation with the farmers we studied whether fraud, i.e. the planting of indicator species, was feasible and effective. To prevent fraud, the part of the ditch banks which should be surveyed by the farmer changes every year and is known to the farmer only shortly before the survey is due to start. Our own plantation experiments showed that the plants do not survive if the ditch bank management is not changed to the benefit of the plants at the same time. Moreover: in about 75% of the cases the fraud could be noticed easily by the inspector. The farmers themselves state that fraud should be punished severely.

CONCLUSIONS

The results of the experiment for ditch bank vegetation offer good perspectives for a system of nature production payments, both for farmers and nature conservationists. On the one hand the study of the feasability of the system does not show any major problem, both the tested measurement of the nature product (by means of indicator species) and the inspection method are adequate. Moreover, the participating farmers are enthusiastic, illustrated by remarks as "this system is absolutely perfect". By this system nature becomes a product of the farmer himself, not just something others "demand" him to protect. As a farmer remarked "The power of the system is that nature becomes your own product".

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EUROPEAN RESEARCH NETWORK ON FIELD MARGIN ECOLOGY

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ABSTRACT

A European Research Network on Field Margin Ecology was established in 1993 as part of a Commission of the European Community-funded AIR3 project on aspects of field boundary ecotones. The objectives of the Network are to foster collaboration between researchers, to promote information flow and to produce a Code of Good Practice in regard to boundary management for use by extension services. A Newsletter, titled Field Margins, is circulated to researchers via the national coordinator for each European Union member state and via observers from other European countries.

THE RESEARCH NETWORK

Field margins constitute a network of semi-natural habitat in farm landscapes which interact with adjacent agriculture and which have a number of potential roles in more sustainable farming systems (Marshall, 1993). Considerable research effort has been made on aspects of the ecology and management of such areas across Europe. Both similar and different approaches have been taken in effecting policy on the management of margins in different countries. The Network seeks to improve coordination of research effort and information flow between interested researchers and policy makers across Europe.

The Network was established within the European Commission's AIR3 Research Programme under contract AIR3 CT-920476/477 with the Directorate General for Agriculture. The objectives for the Network are to:

- to establish links between and a register of researchers and projects on aspects of field margin ecology
- to produce a Community code of good practice for field boundary management
- to produce and circulate a Newsletter to enhance collaboration and information flow

National coordinators were appointed to the Network by the European Commission in 1993 (see on). Further additions will be made to cover most of Europe. The coordinators are gathering relevant information on researchers and projects that will be fed into AGREP, the European database on agricultural research. A bibliographic database is being created by the French national coordinator based on the EndNote program. The Newsletter, which is produced on an occasional basis and circulated by coordinators, is a simple means of

passing information on projects, national schemes, for example the UK Hedgerow Incentive Scheme, and other data to a wide but select audience. Potential contributors are invited to contact their national coordinator listed below:

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Coordinators will be appointed for Spain and Portugal. Once these are in place, observers from Norway (Dr G.L.A. Fry), Sweden (Dr J. Lagerlöf), Austria (Dr B. Kromp) and Switzerland (Dr J. Lys) will be invited as observers to join the Network.

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