Attitude of owners of poplar plantations towards conversion of these plantations

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Abstract

Concern for ecological values is one of the most important topics of today's forest management. In this respect the widespread small scale poplar plantations are strongly discussed, but it is obvious that their nature value can strongly be increased by creation of an understorey or by introduction of other native tree species.
The question is, however, whether the owners are willing to transform their plantations. Therefore this study investigates, via an inquiry by telephone, the owners attitude concerning their poplar plantations. The inquiry was conducted with 60 owners. The response reached 87%. Half of the owners attach little to negligible value to their poplar plantations. Two thirds of them appreciate the artificial or spontaneous substorey in these plantations. Half of the owners are willing to convert their poplar plantation towards a mixed hardwood. 35% of the owners absolutely want to replant poplars in the future.
Authorities can, by means of a directed policy, stimulate the conversion of poplar plantations towards mixed broad-leaved stands.

Key words: *poplar plantation / attitude of owner / conversion.*

L'attitude des propriétaires de plantations de peupliers par rapport à la conversion de ces plantations.

L'un des sujets les plus importants de la gestion de la forêt actuelle est le souci des valeurs écologiques. A cet égard on met sérieusement en discussion les plantations largement répandues de peuplier, mais il est clair que leur valeur naturelle peut être améliorée par la création d'un sous-étage ou par l'introduction d'autres espèces d'arbres autochtones.
Pourtant, il reste à savoir si les propriétaires sont prêts à transformer leurs plantations.
C'est pourquoi cette étude examine par une enquête téléphonique l'attitude des propriétaires envers leurs plantations. L'enquête a été faite avec 60 propriétaires. On a reçu une réaction de 87 %.
La moitié des propriétaires n'attachent que très peu d'importance à leur plantations de peupliers. Les deux tiers apprécient le sous-étage artificiel on naturel dans ces plantations. La

moitié des propriétaires est prête à transformer leur plantation de peupliers en peuplement de feuillus. 35 % des propriétaires veulent absolument replanter des peupliers dans l'avenir.
Les autorités peuvent au moyen d'une pratique dirigée, encourager la conversion de plantations de peupliers vers des peuplements de feuillus.

1. Introduction

Last decades, forest management and forest policy priorities in densely populated areas like Western Europe have considerably shifted towards more nature conservation and ecological values. This is partly due by the increasing scarcity of (vast) forest and nature areas, but also by a lack of ecological quality of the remaining forest. The forest is fragmented and divided over many different forest owners. Many of them, however, have only a limited knowledge on forest management and focus on short term forestry systems and high profitability. This explains the popularity of poplar plantations, at least on appropriate sites such as in Flanders. In this region poplars occupy 15% of the forest area and private persons own 90% of these plantations [13] [14].
A general criticism, however, on poplar plantations is that their diversity is very low and often far below the value of the vegetation types in which the poplars were planted. Even public Forest Services state that these plantations do not fulfil the requirements set for sustainable forestry [2]. Nevertheless, recent research by Muys [15], De Keersmaeker [3] [4], Hermant [7], Pinto et al. [17] and of Hammond [6] shows unexpected high (potencies for development of) nature values in poplar plantations. The presence of an understorey, admixture of other tree species, avoidance of site preparation or conservation of the vegetation layer drastically increase species richness, suggesting that these forest types could very well combine a productive and a nature conservation purpose [16], [21], [18]. In many cases this could already be achieved by using spontaneous ingrowth in these plantations [10]. The central question, however, is whether, and to what extent, the private owner is willing to keep this vegetation and to convert the original plantation type to a more close to nature forest. Therefore this study wants to investigate the attitude of owners of poplar plantations concerning the conversion of their plantations towards mixed broad-leaved stands.
Some former research permits to presume that poplar owners are not biased. Kangas et al. [9] found in Finland, that wood production scores low in comparison with other forest functions. Zimmermann too came to the conclusion in Switzerland that the economic function and wood production of forests are not considered as important. Similar results were obtained by a.o. Hoen et al. [8] in Norway, Smithüsen et al [19] in Switzerland and Selby et al. [20] in Finland. Nevertheless, due to the negative image, that poplar plantations and poplar owners have, the hypothesis of this study is that the owners are not in favour of such a conversion.

2. Methodology

In order to know the attitude of the poplar owners an inquiry by phone was conducted [11], [1]. Hereby the main questions were focused around the following topics: What is aimed at with

poplar plantations? Are the owners prepared to convert their plantations? How many of them absolutely want to replant poplars in the future?

This inquiry was executed at the occasion of a silvicultural study of 175 poplar stands, located in East-Flanders (Flanders-Belgium) [10]. These plantations were owned by 121 persons. Out of them 60 persons, owing 73 parcels, were selected for the inquiry. The interview was taken from the person in charge of the management of the plantation. The response was very high: 87% of the interviewees, viz. 52, were useful for data processing. The results are shown by a frequency distribution.

3. Results

3.1. General results

The 175 examined parcels are owned by 121 different persons, viz. 114 private persons and 7 public persons, meaning that the average parcel covers an area of 1.45 ha. The forest is in 7 cases hold by a company.
From the 62 respondents 60% have only the examined parcel as forest property, whereas the other owners have still more forest. 25% have a forest area smaller than 10 ha and 15% have more than 10 ha of forest. All public owners belong to this last group.
The forest type of the 40% owners, having other forests, is to be characterised as follows:
- 16% have some other hectares of poplar,
- 12% have more than 10 hectares of poplar,
- 8% still have a small forest area with other species,
- 4% still have more than 10 hectares of other forests.

The interview also shows, that the general knowledge about the forest and the populiculture is very low. Nevertheless a large number wants to give the impression that they have a good understanding. Their statements, however, are mostly incorrect.

3.2. The function of poplar plantations

According to the owners, poplar plantations have different functions. The same owner frequently mentions also several functions (Fig. 1).

The functions can be reduced to 3 main groups:
- 56% of the owners state that their poplar plantations mainly have a personal recreational function. A majority of the owners has fenced their property.
- The poplar plantations are for 46% economically important. 19% think exclusively economically. Besides 8% consider the forest as a kind of land occupation. Presence of forest is important, e.g. to prevent wilderness.
- Hunting is important for 12% of the owners. This appears to be mainly for the bigger owners.

A limited number of owners (8%) state that their forest actually does not have a function. They are not at all interested in the forest. Some of them even do not remember that they own a forested parcel.
Other mentioned functions are: green screen for the private or commercial buildings and scientific function.

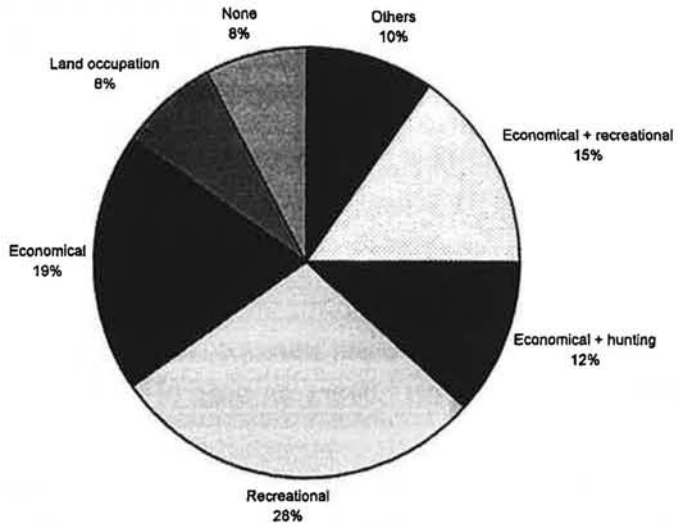

Figure 1. *Functions of poplar plantations for the owners.*

3.3. Attitude towards understorey

The presence of an understorey in poplar plantations is an important element for the increase of biodiversity and nature values. Therefore it is desirable to know the attitude of forest owners towards an understorey.

The answer on the question "what are you thinking about the understorey in your forest" was generally positive:
- 65% of the interviewees consider the understorey as positive for some reason:
    - 38% because of the nature value or the aesthetics,
    - 19% for fuel wood,
    - 15% as protection to game,
    - 12% as suppression for ground vegetation,
    - 3% for water economy,
    - 14% for non specific reasons.
- 25% have a neutral attitude,
- 10% consider the understorey as negative.

Nevertheless, 70% of the owners claim that they have not planted other trees or shrubs between the poplars. The most important admixed species are black alder (*Alnus glutinosa*),

and ash (*Fraxinus excelsior*), but sweet chestnut *(Castanea sativa*), elm (*Ulmus spp.*), maple (*Acer pseudoplatanus),* willow (*Salix alba*), hazel (Corylus avellana) and hornbeam (*Carpinus betulus*) are also planted. Even elderberry (*Sambucus nigra*), which spontaneously establishes abundantly almost everywhere, was sometimes planted.
56% of the owners do not manage the artificially planted or spontaneous understorey. 42% cut the understorey together with the exploitation of the mature poplars. It is used as fuel wood. 2% regularly exploit the understorey.

3.4. Attitude towards preparatory works

Many poplar owners are used to carry out several preparatory works before starting the plantation of poplars. Especially two measures are regularly executed, viz. drainage and soil preparatory works. However, exactly these kind of activities are criticised by nature conservationist, as they can strongly diminish the nature value by disturbing the existing natural flora.

In order to have more information on the abundance of such activities, it was asked what kind of preparatory works they had executed.

23% of the owners state that they have executed some preparatory works before the planting. It mainly concerns the digging of ditches or the maintenance of existing drainage canals.
Next to that the control of the (hindering) ground vegetation occurs as follows:
- a majority of the owners, viz. 54%, does not do any control,
- 29% mechanically control vegetation,
- a chemical control is performed by 13%,
- 4% practice a combined method (mechanical and chemical).

3.5. Attitude towards conversion

The answer on the main question "would you be prepared to convert your poplar plantation towards a mixed hardwood" was variable (figure 2).

- About half of the owners state that they are prepared to convert their poplar plantation towards a mixed hardwood:
    - 40% is willing to do that without additional conditions,
    - 6% ask for technical assistance,
    - 2% are prepared to do that, provided there is a specific subsidy.

17% of the owners are absolutely opposed to further usage of poplar, either for aesthetic or ecological reasons or because of the bad economic experiences.

It appears that at the time being only a limited number of owners applies for technical advice. The Forest Service provides advice for only one person. Another owner asks advice from the Forest Research Institute.

- 35% of the interviewees claim to plant only poplars in the future. The main reasons are:
    - the rapid growth and the short rotation,
    - it is the only species which is still profitable,
    - high planting cost of other broad-leaves,
    - suitability of poplar to grow on wet sites.

-17% of the owners have some doubts about the replanting or do not have any idea.

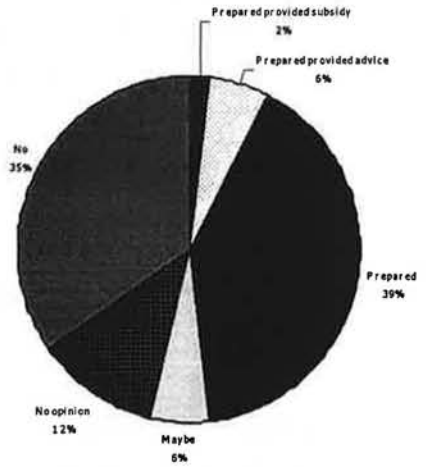

Figure 2. *Attitude towards conversion of poplar plantation.*

It also appears from the interview, that many owners do not have a positive attitude towards the authorities and that they also have a negative picture of the Flemish subsidy systems. They are mainly afraid to loose their freedom of managing and believe that some limitations will be imposed.

4. Discussion

The research reveals at least three important points:
1. Poplar plantations are mostly very small.
2. For half of the owners poplar plantations have only little economic importance.
3. Half of the owners is prepared to convert their poplar plantation towards a mixed broad-leaved forest.

Of course these three features cannot be evaluated separately. Small forest properties do not interest many people. They are not a significant part of the global income of the owners, who mostly have only a limited amount of forest and who are not dependent for their income on the wood production of their forest. Therefore it is after all not so surprising that almost half of the owners give a personal recreational function to their poplar plantation and that they are willing to convert the plantation towards a "nicer" forest, viz. a mixed broad-leaved forest.

This idea is related to the attitude of the owners towards the understorey. It does not have a great economic value, but nevertheless it is generally considered as positive, viz. by 65% of the interviewees. This is clearly more than the 30%, who have spontaneously executed an underplanting with secondary species.

The results show that, by means of a directed policy, it must be possible within a short term to convert a large number of poplar plantations towards ecologically more valuable forests. Apparently it is sufficient that the owners get some support and that they are informed about the possibilities and the usefulness of such a conversion. The biggest problem, however, showed to be the lack of contact with the Forest Service and the insufficient information about the usefulness and the possibilities of such a conversion. In this respect it can be mentioned that the Flemish forest administration tries to involve the private forest owners into its policy. Next to subsidies, the forest administration helps to a certain extent private owners by providing them with technical advice. It is mainly oriented, however, towards owners having a forest larger than 5 hectares.
Valuable as they may be, these initiatives apparently do not have a great impact. They are by far not sufficient to realise the big possibilities for conversion. A more direct and permanent contact with the owner is needed.

Besides, the study shows once more that the forest owner has only a limited knowledge about trees and forests (Vanderlinden et al., 1998). It also confirms that many forest owners do not consider the economic function as important [23], [9], but that they mainly value the social and ecological function of the forest [12], [22].
The study contradicts, to some extent, the results of an inquiry, conducted in Flanders by Dimarso-Gallup [5], which indicated that the private forest owner had a good knowledge about the new Flemish Forest Decree and that he had a positive attitude towards the forest administration. This contradiction is probably explained by the general character of the inquiry by Dimarso-Gallup, whereas the present research dealt with a concrete subject, viz. the attitude towards poplar plantations. In practice only one owner out of 52 had collaborated with the forest administration in order to establish his plantation and to maintain it. Herewith it must be added, that before the new Flemish Forest Decree in 1990 the forest administration was not at all involved or charged with the private forest. This has obviously still its consequences. Many owners do not want any involvement of the forest administration in their forests. They are even not interested in subsidies. They mainly wish to keep their personal freedom.

The owners who have executed an underplanting, although lacking a basic forest knowledge, have mostly planted the suitable species, viz. mainly black alder and ash. It appears also that poplar owners are not so environmentally and nature unfriendly as it is sometimes generalised. Indeed, drainage is certainly not a general measure and only 15% carry out chemical weed control. Moreover, they mostly consider the understorey as an increase of nature value or aesthetics. Consequently an eventual prohibition of chemical weed control and drainage is apparently acceptable to a large extent. On the contrary a general prohibition of poplar plantations should provoke a big resistance. Indeed, still more than 1/3 of the owners want to

plant in the future only poplars and poplar plantations have still a big economic value for half of the owners.

The major conclusion of this research is undoubtedly, that many owners of poplar plantations are prepared to convert their plantation towards a mixed hardwood. This is obviously in contradiction with the hypothesis, which, based on daily criticism, stated that a positive attitude towards conversion is to be considered as exceptional.

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