

CONFLICTS CAUSED BY AFFORESTATIONS OF AGRICULTURAL LANDS IN DENSELY POPULATED AREAS

(Paper presented at the EEC workshop on afforestation of agricultural land, Brussels Dec.,12-13, 1991.

N. LUST and B. MUYS
Laboratory of Forestry
University of Ghent (Belgium)

ABSTRACT

In densely populated areas, such as Flanders, serious conflicts arise due to the afforestation of agricultural lands. Roughly speaking, three sectors are involved : agriculture, forestry and nature conservation. These groups do not always share the same points of view. But even within the different sectors there are several sub-groups with their own interests and approaches. Generally speaking, agriculture is strongly opposed, forestry has a relatively diversified meaning, whereas nature conservation is either opposed or in favour, depending on the region's biological value.

The policy in this matter is not forest friendly. Legislation strongly hampers the afforestation of agricultural lands.

Moreover the subject leads to a series of ecological problems, which have not really been considered up to now.

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1. INTRODUCTION AND PROBLEMS

There are several good reasons for the E.C. to afforest an extra area of 15 to 20 million ha, thus increasing the forest area with one third. These reasons mainly boil down to the following issues : there is a surplus of agricultural products, and a shortage of wood products, nature and landscape values are becoming more important now, recreative capacities could be extended considerably, there is a growing concern for all kinds of ecological and environmental aspects (CO₂ absorption, soil and water protection, buffer against pollutants) etc.

Consequently, it is to be expected that the society largely agrees with a policy of afforestation of agricultural lands. This is, however, not the case in Belgium, and certainly not in Flanders. Quite on the contrary, a lot of conflicts arise around this issue. Here the most involved parties are : the farmers, the foresters and the nature conservationists.

For a better understanding of these conflicts some basic data can be indicated (N.I.S.; Schreurs) :

- Nowadays, the Flemish population amounts to 5.70 million people. This number corresponds with an average of 420 inhabitants per km². Several regions are characterized by a density of 750 inhabitants per km², whereas others have still less than 250 inhabitants per km².
- It is to be expected that, within a period of 50 years, the population will drop to 4.66 million people. At the same time, the senility coefficient (number of persons of 60 years and more, divided by the number of persons younger than 20 years and multiplied by 100), will have risen from 78 to 180.
- About 65% of the soils are covered by arable land (40%), pasture lands (23%) and orchards (2%).
- The available agricultural area is 15 ares per person. This is the lowest proportion within the E.C.
- Every year, a considerable surface is withdrawn from the agricultural area for all kinds of objectives. Less than 5 % of this area is estimated to be afforested.
- The average selling price of the agricultural land is high, namely 525,000 BF/ha (= 12,440 ECU/ha).
- Almost 70% of the agricultural area is exploited on tenancy.

- The farm succession is not assured. About 60% of the farms are run by an exploiter who is older than 50. It is estimated that the succession of these farms is guaranteed for only some 27%.

Data such as these lead to the conclusion that on the one hand part of these characteristics encourage afforestation (decrease of population; very low forest area; uncertainty of farm succession), but on the other hand a lot of features can be considered to be drawbacks (very high population density; small agricultural area/capita; considerable land prices; high pressure on land use; large share of tenants).

Still, the afforestation of agricultural lands is not a new problem, and it surely isn't in Belgium. Ever since the 18th century, and especially in the course of the 19th century, a lot of agricultural lands were afforested, partly due to the improvement of agricultural techniques (Gathy).

2. ATTITUDE OF THE MAIN PARTIES INVOLVED

It can not be denied that the whole society itself is the main involved party. Although it pays a clearly increasing attention to the forest, its pressure on forest policy is still very low. This means that the greatest number of forest users hardly have any impact. Moreover, the representatives of the people, in particular the members of the parliament, are hardly interested in the forest. In the Flemish Council (or in the Parliament) forest policy is discussed only very rarely.

It can be stated quite clearly that the problems concerning the afforestation of agricultural lands, are not the major points of interest in Flanders or in Belgium. In recent years, however, the subject has been discussed relatively thoroughly by three more specific groups, namely the agricultural sector, the foresters and the conservationists.

2.1. The agricultural sector

Here a distinction should be made between the farmers themselves, the agricultural organisations and the national authorities. However, the question arises immediately in which degree these groups are independent from each other.

In the whole E.C. some 16% of the forest area belongs to a farm undertaking. In Flanders, however, the farm forest is negligible.

It is quite obvious that the Flemish farmer, for many reasons, is rather hostile to the

forest and that he is very little tempted to afforest agricultural lands. Up to now, within the framework of set-aside, only 35 ha, spread over a period of three years, were afforested in Flanders. (That situation is hardly better in Wallonia, namely 42 ha. Besides, in Belgium only 706 ha of agricultural land have been abandoned, of which 11% were afforested.)

This result is, among other things, a consequence of the clearly negative attitude, in the past as well as nowadays, of the agricultural organisations towards the forest. Indeed, the point of view in this matter of the major farmers union can be summarized as follows (De Boer):

- We are not the demanding party. We have to make sure that the inconveniences are as little as possible.
- The abandoning of agricultural land might just have a temporary character.
- The region plans have to be respected, so that afforestation within the agrarian zone is avoided as much as possible.

Laeremans and Beyers draw the following conclusions : "We hope you do not belong to that category, to whom set-aside is interesting".

So it is not amazing that the point of view of the national Ministry of Agriculture can also be described as very forest hostile. The main features of their policy in this matter are :

- The action just has a limited duration of 5 years.
- The agricultural lands must keep their original destination. The alteration of the destination may not have a definitive character.
- The abandoned lands must be maintained, so that the soils remain in an agriculturally good condition.
- Possible alterations in use should correspond to the tenancy code and to the legislation on rural planning.
- Nowadays there is no reason to support afforestations actively with an agricultural budget.

The negative attitude towards the forest is also clearly shown in the ministerial decree of October 20 1988 and July 23 1990 :

- The financial support is limited. Initially, in Flanders a grant of 14,000 to 17,000 BF/ha was awarded. Later on, it has been increased to 17,500 to 25,000 BF/ha/y (415 to 592 ECU/ha).
- No incentives are awarded for the afforestations themselves.
- The choice of tree species is limited in the agrarian zone (cfr. region plans) to three species : some poplar clones, alder and willow

The negative attitude from the Belgian government towards afforestation does not correspond to the spirit of the EC objectives. If 3% of the agricultural area must be set-aside, as was the objective of the E.C. Committee, it should be possible to afforest 20.000 ha of agricultural lands in Flanders. As the present average is only 12 hectares per year, it is obvious that other measures will be necessary.

Generally speaking, the E.C. policy still has to be adjusted drastically.

1. A specific forest policy must be pursued. It is obvious, however, that it has to take into account the agricultural problems. In this respect the following issues can be pointed out.
 - The basics of forestry and agriculture are not the same. Forestry is characterized by concepts such as sustainability and long term.
 - The EC pays too much attention to the principles of "temporary forest" and "farm woodland". The agricultural techniques must not be transferred to the forestry. Afforestation of agricultural lands should not be directed onesidedly towards wood plantations. The principle of multiple use should be recognized and promoted.
2. Grants in favour of forestry should be increased. As things stand, they are, in comparison with agriculture, very low, negligible even. In Belgium they just amount to 0.5% of the authority support to agriculture (11% in the U.K.).

2.2. The forestry sector

Scientists clearly stress that there is a considerable shortage of forests in Flanders, as well for economical as for ecological and social reasons. The problems are not limited any longer to a regional level, but experts strives for a holistic approach, in which the ecological issues are at the centre. In this respect, it is obvious that most attention is paid to problems such as deforestation in the tropics and global change. Afforestation

has to be considered as an ethical duty.

It is quite difficult, if not impossible, to determine how many forests are needed in a certain region. A forest extension working group stated in 1988 that Flanders should try to afforest 1000 ha every year (De Schuyter et al.). In this way, the forest area would be increased with 50% to 12% of the total area in 2050, provided no more deforestation has taken place. A similar afforestation activity took place 100 years ago, but it is very doubtful that this will happen again in the future. The crucial question here is : how and where. It is unavoidable that agricultural lands will, to a large extent, be affected in this matter. Afforestation of five percent of this area already permits to realize half of the objective. It is obvious that afforestation of the lands should not lead to a decrease of the soil fertility. For that reason special attention should be paid to the choice of the tree species. Especially the species with a mull humus have to be used in an appropriate way. Also poplar belongs to that group.

The share of the landowners, who are interested in the set-aside regulation and in the afforestation of agricultural land, is unknown. Anyway that group stresses the "ecological nonsense"

of the legislation restricting the choice of tree species to poplar, alder and willow. Indeed, these species are not appropriate to all sites, particularly to poor and dry sites and to colder and more elevated sites. Moreover they indicate the "economical nonsense" as afforestation leads to a value devaluation of the lands in the order of 50 to 70 % (M.T.).

Apart from that, the landowners are, just like important groups of the wood industry, particularly interested in fast growing tree species, short rotations and wood plantations. Their vision in this respect is parallel with the agricultural organizations and the E.C.-policy. It is mainly directed monofunctionally, aiming at maximum financial return on short term.

The expectations of the Forestry Service with regard to the afforestation of agricultural lands are not so great (Dua).

However, some positive points are mentioned :

- the increase of the forest area;
- the greater ecological value of the forest in comparison with agricultural lands;
- the increasing impact of the forestry sector, particularly within the agricultural sector.

The Forestry Service, however, formulates also some critical remarks :

- one stresses mainly the economical function

- small scale forestry and parcellization of the Flemish forestry will still increase; there is a real risk for stamp-afforestations;
- the profitability of these exploitations is not ensured;
- the farmers are not familiar with forestry and forest treatment.

For these reasons some accompanying measures have to be taken :

- grouping of agricultural undertakings, in order to enable a common management;
- the performing of a kind of land consolidation, where parcels that are to be afforested are grouped spatially; this requires, however, an adaptation of the legislation; yet it corresponds to the idea of the establishment of a ground-bank, as proposed by the E.C.;
- the necessary information should be made available and the farmers should be assisted in a professional way.

Furthermore the service still underlines two specific problems, namely the legal security of the tenant and the aspects of rural planning. Here the question arises if the local authorities have the right to forbid an afforestation which was applied for within the framework of the set-aside regulation. Indeed this ordinance states that all agricultural land is eligible. So it concerns an undisputable right of the farmer.

Finally the Forestry Service claims the necessity of a specific E.C. forestry policy, independent from the E.C. agricultural policy.

2.3. The nature conservation

It is obvious that since the last decades, the impact of nature conservation has largely increased in Flanders. From the political point of view this group has become much more powerful than the forestry interest group. The later lobby, and in particular the great number of forest owners, is not united and hardly affects political decision making.

Nature conservation also tries to extend its power to forest policy. Indirectly, its impact is considerable already. But its participation in the legislation is equally remarkable.

Nature conservation in the forests is particularly directed towards the protection of flora and, albeit in a lesser degree, of fauna. It is amazing to see how small nature conservation stresses global ecological aspects.

Topics such as global change, soil- and ground water protection, nutrient cycles, forest

stability and vitality hardly come up.

Besides, it is also very remarkable how it uses and stimulates all kinds of artificial management techniques in order to preserve or to increase nature values.

Generally speaking, much attention is paid to the flora richness, to plant communities of wet meadows and swamps, to the avifauna of certain pasture lands and to ancient forests. Consequently, nature conservation is opposed to the use of exotic tree species, the exaggerated one sided economical or recreative function of forests, the poplar plantations and the afforestation of biologically valuable regions. In this respect, afforestation of valley grounds can be mentioned as a typical example. Of course, due attention is also paid to landscape motives.

In order to justify their objectives, nature conservationists refer to existing or designed plans or maps: the region plans, the biological evaluation maps and the model of the green head structures. However, the scientific significance of these maps is doubtful.

In short, nature conservation makes a reservation towards the afforestation of agricultural lands, particularly if this could lead to a decrease of the biological value of these regions.

3. LEGAL ASPECTS OF AFFORESTATIONS OF AGRICULTURAL LANDS IN FLANDERS.

Afforestation of agricultural lands in Flanders is hampered by several laws. So it was hoped that the new Flemish Forest Decree (1990) would improve this; unfortunately, quite the opposite happened.

- The field code determines that the bench of mayor and aldermen must grant a licence for afforestations in agricultural zones. The objective of the law was to preserve the grounds with an agricultural destination from a disorderly afforestation. A logical decision, as the city councils of rural regions, under pressure of the agricultural lobby, granted only few licenses in the past.
- The tenancy code strongly hampers afforestation. In principle, the lessor is not allowed to afforestate, whereas on the other hand the tenant can do it, provided he has a written licence of the landlord.

- The Forest Decree of 1990 contains some remarkable stipulations.
 1. All temporary plantations, which occur within the framework of set-aside, are not submitted to the Forest Decree. Consequently, it is impossible to award grants to these plantations on the base of the Forest Decree. This article was taken up at the suggestion of the agricultural lobby (art.3). The question arises, however, if it is in accordance with the European ordinances.
 2. A number of licenses are required for the plantation with woody crops of grounds situated in an agrarian zone :
 - the licence of the city council (cfr. field code);
 - the uniform advice of the Service Agriculture on the one hand and of the Service Forestry on the other hand.
 3. The advice of the Service Nature Conservation has to be sought for the afforestation of lands situated in agrarian regions having a high ecological value.

Valley grounds are an example of such regions. As mentioned above, that service is mostly opposed to afforestations in these areas.
 4. The deforestation in agrarian regions is facilitated.
- The restrictions implied by the ministerial decrees on set-aside. Major points to be indicated :
 - the abandoned area must amount to at least 20 % of the whole farm area;
 - the choice of tree species (poplar, alder and willow);
 - the limited financial support, over a period of five years.

The conclusion is quite clear : the afforestation of agricultural lands is discouraged and is made legally very difficult. This policy is in contrast with the general objective of the Forest Decree, that aims at an extension of the forest area. The regulation of the forestry in agrarian zones is undoubtedly the weakest point of the Flemish Forest Decree.

4. ECOLOGICAL ASPECT OF AFFORSTATION OF AGRICULTURAL LANDS

Although afforestation of agricultural lands is not a recent phenomenon, up to now just little ecologically directed research on its consequences has been carried out (Brückner). In the past attention was paid mainly to production and yield.

Miles, on the other hand, investigated the impact of afforestations on the vegetation and on the soil. With a colonisation of poor moorland soils with birch he found a.o.

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- there is a considerable increase in the number of surface living earthworms, especially *Lumbricus rubellus*;
- there is a gradual breakdown of the old *Calluna mor* humus layer and its conversion to a mull like form, probably due largely to earthworm feeding;
- increased rates of organic matter decomposition and of nitrogen mineralization;
- a decrease in exchangeable hydrogen, but increases in pH, exchangeable calcium and total phosphorus.

Brückner et al. investigated into the impact of different land use on the soil. An eighty years old first afforestation with norway spruce was compared with a 30 years old mixed hardwood after one spruce generation and with a pasture that was intensely used for more than 30 years. Significant influences were everywhere restricted to the upper 30 cm layer. The forest soil had a greater pore volume than the pasture land. On the other hand the latter had several better soil chemical characteristics : pH, base saturation, amounts of C, N, Ca, Mg, P, Zn and Mn. The main determinants for this were the intensive fertilization, the litter quality and the earthworm activity. The hardwood, planted after spruce, considerably ameliorated in 30 years the upper soil layers. Conifers, on the contrary, decreased on long term the amount of exchangeable bases in the upper layers and altered the humus from mull into moder.

In Flanders, Muys investigated the ecological changes following the artificial afforestation with different tree species (*Quercus palustris*, *Tilia platyphyllos*, *Prunus avium*, *Alnus glutinosa*, *Fraxinus excelsior*, *Quercus robur*) on a sandy loam soil. His major conclusions were :

- tree species with refractory litter, such as *Quercus* sp., lead to litter accumulation and soil acidification;
- this degradation is expected to be irreversible when soil pH decreases under 4;

- forests with mull humus are more resistant to external proton loads;
- the afforestation of good quality soils should use tree species with high quality litter (ash, sweet cherry, maple, walnut, poplar, willow);
- an interesting vegetation can develop under these species.

From the ecological point of view a number of questions arise with the afforestation of agricultural lands such as :

- What is the impact of an afforestation on the soil? Does the afforestation lead to a loss of soil fertility ? What is the course of the nutrient cycle ? Is it possible to restore soil degradation ?
- Which tree species are eligible ? Which mixture- and structure ratios have to be recommended ? What is the value of a substorey ? What is the share of hardwood species and of softwood ones ? What is the course of the natural succession ?
- Which afforestation techniques can be considered to be environmentally friendly ? To what extent are soil preparation (ploughing), drainage and fertilization allowed? To what degree the principles of wood plantation can be followed ? What rotation is to be reckoned with ? And how should exploitation and harvest be done ?
- What is the impact of the afforestation on the global ecological value of the region and on the biological value separately ? How do flora and fauna evolve?
- How do forests react on new soils, which are over-fertilized, and on external pollutions ? Are the stability and the vitality of the forest ecosystem assured ?

All these questions, and many others, have to be investigated. Buysse deals with two pressing questions in Flanders, mainly the afforestation of valley grounds and the ecological value of poplar plantations. He states a.o. the following points.

- An inconsiderate afforestation could have a negative impact, especially for some grassland communities. The rare and vulnerable biotopes should be preserved from an unjustified afforestation.
- The afforestation of open valley grounds mainly affects the meadow birds and especially the stilt-walkers.
- In areas, mentioned in the E.E.C. bird directive and in regions where strongly

threatened bird species are found, afforestation is only justified if it joins existing forest centres and if each time enough free space is left. The minimum free area reaches 5 hectares.

- The plantation of poplars can not always be the most appropriate solution. Ploughing, fertilization and drainage are not acceptable in biologically valuable regions. However, if an appropriate afforestation technique is used poplar plantations can also lead to major ecological advantages :
 - the soil and water economy should be disturbed just as less as possible (no ploughing; no fertilization; no drainage);
 - wide plant distances (9x9 m) have to be used, associated with an admixture of an underwood of broadleaved tree species or shrubs at small plant distances (2x2 m);
 - the rotation must be as long as possible (= high quality of heavy dimensions) and the exploitation must be carried out in an ecologically friendly way.

- The authority has to follow and to stimulate a well thought-out policy. In this respect, it might be interesting to introduce a grant system that takes into account the biological value of the region.

CONCLUSIONS

Although there are several reasons to afforest agricultural soils, also and especially in the densely populated Flanders, a lot of conflicts arise around this subject. In this discussion three groups are involved : agriculture, forestry and nature conservation.

It is obvious that the whole agricultural sector is completely opposed to an afforestation policy of agricultural lands. Therefore, politicians try to minimise as much as possible the E.C. policy in this matter. Consequently, the results of the set-aside regulations are very bad, particularly as to the afforestation of abandoned agricultural lands.

The forestry lobby, on the other hand, generally aims at forest extension. It is obvious that agricultural lands are eligible to this. Within the forestry sector, however, the meanings are divided: landlords and wood industry mainly stress financial aspects, while politicians and scientists are more directed towards multiple use forestry.

Finally the nature conservation has a considerable impact on the global policy. It states that afforestation of biologically valuable regions is not acceptable. In particular valley areas are considered. There is also a dislike of poplar plantations.

As conclusion it can be stated, that in densely populated areas such as Flanders :

- the policy should aim at an afforestation of a part of the agricultural area;
- multidisciplinary scientific research has to determine which lands are eligible and what kind of forest types are wanted;
- the legislation must be adapted in order to allow for the afforestation of agricultural lands.

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