

IMACFORD Task B1

Regional workshop “Research needs for the sustainable management of cultivated forests” Consultation of the forestry-wood chains actors in Atlantic Spain

15 May 2003 – Santiago de Compostela - Spain

- Main points of discussion

Appendix

1. *Workshop programme*
2. *Participants*

Fifty forest professionals from the whole Atlantic Spain attended the workshop. Representatives of the forestry sectors (private forest owners associations, private forest companies, public tree nurseries), of the industrial sectors (pulp and paper companies, unions of sawn-wood industries and wood sellers), of the regional forest authority and the private and public forest and wood products research communities (the full list of participants is given in annex), have demonstrated their interest in an open discussion on research priorities for the development of the forest activities in Atlantic Spain.

In Atlantic Spain, the development of the forestry-wood sectors is closely linked with the context of increasing international competition on wood markets, and emerging social and environmental constraints (sustainable development requirements) on the forest and industrial activities.

The end-users research expectations stressed by the participants and presented below are mostly determined by those two factors.

1. Tree breeding and forest plants production

Genetic improvement requires an important economic investment for the whole Society (public research financing) as well as for the actors of the forestry-wood chains (higher cost of genetically improved plants). In order to capture all gains at mid and long term perspectives, the genetically improved plants need to exactly fulfil the market and industrial demands (wood quality), and to be adapted to the new ecological constraints of climate change (plants with drought or pests and diseases resistances). In that perspective, tree breeders and end-users have to closely identify the relevant traits to be genetically improved (Dans, AFG).

Regarding the pragmatic implementation of the genetic improvement programmes, tree breeders need to enlarge their current improvement basis (selection of plus trees) for the forest tree species of economic interest at the regional level (Ruiz, Xunta de Galicia). In addition to that, the viability and the genetic gains of varieties from foreign provenance areas introduced in the regional ecological conditions have to be tested. Finally, a database of the genetically improved varieties available at the regional level is needed to avoid the duplication of efforts for the tree breeding community and to deploy development strategies with the foresters (Fernandez, CIF).

To optimize the costs of reforestation and to contribute to the production of wood quality, tree nurseries need to provide the foresters with a good quality of forest plants in terms of low juvenile mortality and quick initial growth (Rodriguez, USC).

To achieve those objectives, tree nurseries have to improve their techniques of production (e.g. the adequate type of containers per tree species or the efficient techniques to mycorrhize the substratum). Regional technical guidelines for a qualitative production of forest plants in tree nurseries are required.

2. Silviculture, forest planning and inventories

In Atlantic Spain, the great diversity of ecological conditions coupled with a complex structural organization of the forest ownership requires specific silvicultural approaches (Ruiz, Xunta de Galicia). In that perspective, regionally understandable forest planning and forest management models and tools are needed.

Furthermore, to fulfil the new socio-economic demands for wood quality, non wood products and forest services, the current silvicultural guidelines have to be updated.

Research has to integrate the new expectations towards forests into the forest models in order to define the more efficient and cost-effectiveness silvicultural scenarios and techniques (soil preparation, initial densities of forest plants, intensity of pruning and thinning, etc.).

Modelling the interrelations between sites and silvicultures on wood quality formation would lead to the definition of industry-oriented silvicultural scenarios for the improvement of wood quality. It could lead to the elaboration of silvicultural recommendations to avoid the formation of reaction wood (Martinez, NEIKER), to a diversification of the industrial uses of *Eucalyptus globulus*, or to develop relevant industrial-focused scenarios for *Eucalyptus nitens* in Galicia.

Reliable silvicultural guidelines (Dans, AFG) are also required to ensure the economic (logging of high economic value timbers) and ecological sustainability of mixed broadleaves forests (conservation of soils and water, protection of biodiversity, etc.).

Furthermore, considering the emerging market of carbon credits, the Spanish forest managers could be interested in the implementation of silvicultural scenarios to store carbon in their forests to diversify their incomes. In that perspective, research still has to evaluate the energetic efficiency and the economic balance of “carbon-sink scenarios” within the Atlantic Spain forest context (Merino, USC).

At the regional level, in order to assess the impact of the forest management practices and to develop sustainable management guidelines for the conservation of biodiversity, carbon storage or soil protection, the forestry-wood chains require qualitative indicators of sustainable forest management (Alvarez, USC)

The definition of the relevant indicators, the scale of their reliability, the methodologies and the cost of their assessment are still required. They should be included into decision support systems.

To reduce the costs of the logging operations, the foresters need tools to identify the right equipments and techniques in relation with the forest and site characteristics (surface, slopes, soil humidity, etc.).

Considering the multiple socio-economic demands towards forests, the forest models need to integrate new variables from the forest inventories (Rojo, USC). It concerns the tree level (mensurations, wood quality, bark content and wood density) as well as the stand level (non-wood products or biodiversity). Reliable and cost-effectiveness methodologies to collect the new data have to be further explored (efficiency of a network of permanent plots?).

Regarding the use of the forest inventory data, the large diffusion of the forest resource characteristics through a database would make the development of new qualitative and quantitative forest growth models and volume tables easier (Alvarez, USC). Furthermore, the development of new volume measure techniques closer to the reality would be facilitated.

The industrial sectors require reliable and updated data on the quality of the wood resource and its geographic localization in order to optimize log transportations and industrial processes. In that context, the rotation between each data recollection could be reduced for the fast growth tree species (Vega, USC).

3. Nutrition status and protection of forests

SOILS FERTILITY

The main impeding factor of the development of intensive forest practices lies on the limits of soils productivity. Therefore, managing soils fertility represents a key-issue for the sustainable development of cultivated forests (Merino, USC).

In that perspective, research must provide the forest managers with sustainable forest management guidelines taking into account the physical (ability of soils to sustain mechanized forest operations) and chemical capacities of their soils (ability to sustain intensive silvicultural practices or genetically improved trees).

Regarding the issue of nutrients supplies by fertilization, research has to implement experimental methodologies and to develop operational tools to answer the pragmatic questions of the foresters: What, How much, When and How.

The evaluation of the amount and the nature of nutrients fixed per tree physiological compartments (per ages and per tree species) requires reference data for the realization of nutrients balances at the forest stand level.

Good responses to experimental nutrients supplies and litter management practices (e.g. understorey management, slash management) should orientate management practices for fertilized forestry scenarios.

Studies on the cost-effectiveness and the environmental impacts of fertilization and soil preparation also need to be conducted.

FOREST HEALTH

Considering the socio-economic importance of the forestry-wood chains in Galicia, the set up of a regional network to monitor forests pests and diseases dynamics has been demanded.

In addition to the evaluation of threats, the biotic risk management also lies in the implementation of an integrated prevention strategy (Magan, CIF). The expected outputs will be to provide forest managers with appropriate forest management guidelines and decision support tools integrating biotic risk control (Dans, AFG).

To achieve that objective, research needs to better understand the impacts of the site and the silvicultural factors on the pests and diseases dynamics as well as the susceptibility of genetically improved trees and exotic species to forest pests and diseases. These information are required by forest management models.

Regarding the protection of forests, the development of Integrated Pest Management strategies (biological control and use of semiochemicals) would favour the ecologically-friendly and economically-reasonable control of biotic threats. To implement IPM strategies, reliable diagnostic methods have to be transferred to the forest managers as well as the list of legal biocides available in forestry.

FOREST FIRES

To prevent forest fires, appropriate landscape planning strategies (territorial mosaic of rural uses, management of the interfaces between forests and urban areas, bush management) and techniques (fuel management, silvicultural management, deployment of fire tolerant forest species) have to be defined by research (Vega, CIF-Lourizan). For instance, in order to mitigate the risk induced by silvicultural practices, research has to elaborate predictive models to identify the impacts of trees and stands architecture on forest fires behaviours (considering ground and canopy fires).

Then, the development sector will provide the public administrations and the forest managers with decision support systems and technical guidelines to be implemented at stand level.

Considering forest fires fighting strategies, the elaboration and the cartography of fire risk indices based on the meteorological conditions and the fuel humidity content will contribute to optimize the allocation of forest fire fighting equipments and teams.

Efficient, safer for humans and cost-effectiveness forest fires fighting strategies are required, as well as ecologically-friendly practices and in that perspective, the ecological benefits of fire retardants still have to be assessed.

Within the objective to implement adequate rehabilitation techniques of burnt areas, the ecological effects of forest fires on water, carbon and nutrient cycles, on soil physical status and on the ecological dynamics of surrounding biological populations need to be better understood.

4. Socio-economics

In Atlantic Spain, the high fragmentation of private forests represents a heavy constraint to the management of forests and to the competitiveness of the wood sector as well (Vilariño, USC).

To raise those limitations, the promotion of private forest owner organizations and the development of specific tools for the collective management of multiple private forests stands are demanded. In that perspective, research will have to provide the decision-makers and the developers with reliable information about the socio-economic characteristics and motivations of the private forest owners.

Moreover, a political commitment to enhance the grouping of forests lands and to get the forestry financial system more attractive to forest activities would also facilitate the development of the forestry-wood sectors in Atlantic Spain.

Considering the weak cash flow of forest activities and the increased and diversified demands for wood quality emerging from the markets, and for forest services emerging from the Society (biodiversity conservation, soil and water protection, recreation equipments, etc.), new funding mechanisms to support the development of the private forestry sector have to be defined. For example, financial means to make thinnings profitable for the forest owners are required.

Market, taxes and public subsidies opportunities have to be further explored. In that perspective, the people in charge of the political and economic development of the forestry-wood sectors need to objectively understand wood and non-wood products markets functioning as well as new forest services markets.

The establishment of an interregional observatory (Touza, CIS Madera) on the industrial costs would contribute to identify the macroeconomic and juridical measures that would make Galicia more attractive to high value wood transformation manufactures (furniture, moulding, etc.).

In spite of the contribution of the forestry-wood chains to the regional incomes in Atlantic Spain, several studies conducted on the perception of forests by the Society have shown that most of the time the economic function of forests is not perceived as an important one. Considering the increasing awareness of the Society for environmental considerations, the regional forestry sector has to better communicate on its activities. The forestry sector has to get closer to the non-professional actors. Research has to further describe the mechanisms of social representation of forests and forestry.

5. Competitiveness of the wood sector and wood products

The main discriminative factor of a broader commercial use of wood products lies in the natural heterogeneity of the material. Thus, the segregation of homogeneous wood quality classes represents a key-issue to increase the competitiveness of the forestry-wood sectors (Basurco, ENCE).

To optimize log transportations and industrial processes, pulp mills need to link the products to the processes through the development of non-destructive, quick and cheap fibre quality tests in accordance to practical criteria for the pulp making process (yield, density, chemical composition).

Moreover, logistic systems coupled with GIS are required for the optimization of the forest operations.

Pulp mills produce an important quantity of mineral ashes and the cost of their disposal represents a constraint in the competitiveness of the wood sector. For that reason the economic and ecological opportunities to supply cultivated forests with industrial ashes need to be further explored.

A better competitiveness of the forestry-wood chains in Atlantic Spain (Touza, CIS-Madera) also lies in the economic and marketing promotion of the forest resources available at the regional level (e.g. develop higher value silvicultures for *Eucalyptus globulus*, investigate industrial opportunities for *Eucalyptus nitens*, propose attractive and reliable wood based products of Maritime pine).

CONCLUSIONS OF THE WORKSHOP

The representatives of the forestry-wood sectors in Atlantic Spain stressed the need to develop management tools specifically adapted to the regional ecological and regulatory conditions in order to better comply with the socio-economic demands and with the conservation of forest productivity factors.

Considering the important growth rates of the industrial forest plantations in Atlantic Spain, the establishment of regional observatories on the quantity and the quality of the forest resources will facilitate the implementation of prospective studies on wood availability and quantity within the next 15 years (Where are we going?). Pragmatically, those results would serve the wood-industries and the public authorities in the identification of the best development strategies and forest policy orientations (Toval, ENCE).

Taking into account the new socio-economic demands for wood quality and multiple forest services (biodiversity, recreation, soil and water conservation), the forestry-wood chains require alternative silvicultural scenarios for both industrial and traditionally non-industrial forest tree species. For instance, the issues of biomass production for energy or storing carbon in forests were raised. The forestry sector demanded technical guidelines for the implementation of sustainable forest management and forest operations practices in accordance with the recommendations of PEFC, for instance regarding forests soils conservation.

Nevertheless, the economic profitability of forestry under new silvicultural scenarios (recreation or biodiversity and also wood quality) is essential to incite the foresters to develop new management practices. Financing opportunities for forest activities have to be explored by research.

In order to capture all gains, research has to be followed by efficient technology transfers for day-to-day operations. In that perspective, the setting of an inter-professional discussion forum on research at the regional level would contribute to identify the research needs and to define the best technology transfers and communication strategies in order to provide the end-users with the tools and the methodologies they require. For instance, the forum would facilitate the development of Integrated Pest Management strategies, identify the relevant traits to be genetically improved, or clarify the strategy of diffusion of genetically improved varieties at the regional level (Ocaña, Tragsa)

Another pragmatic output of the inter-professional forum for research transfer and communication organization would be to develop regional data cooperatives, e.g. on forest resources characteristics (Vega, USC) or on the availability at the regional level of relevant information for indicators of SFM.

In addition to that, the inter-professional discussion will facilitate the diffusion of best forest management and forest operations practices by defining appropriate professional training strategies.

The forum will also provide the basis to a platform of communication on the development of the forestry-wood sectors with the Society.

Finally, the participants highlighted the need to optimize the public financial investments in research and to avoid effort duplications by the set up of multidisciplinary teams and research networks at the national and interregional level.