

# Spanish research and development priority lines on forest products

by Juan F. GOLFIN\*

## Wood

- Characterization of woods from fast growing species or with high value.
- New applications of products from prunnings and thinings.
- New technologies for wood preservation.

## Cork

- Quality factors in cork. Characterization, standarization and grading.
- New technologies, products and applications of cork.
- Relations between cork and wine and wood and wine.

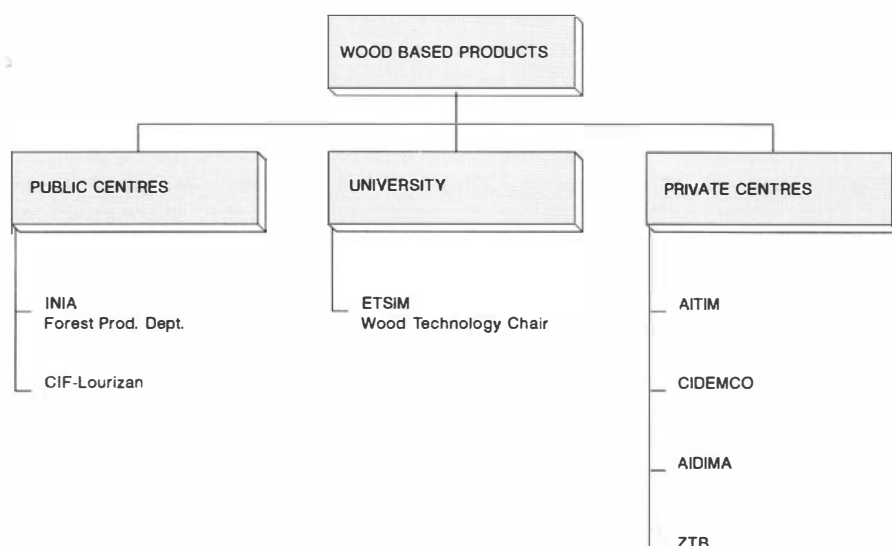
## Pulp & paper

- Identification and characterization of new fibrous raw materials and new applications.
- High yield pulping processes.
- Less contaminant bleaching processes for the pulping industry.
- New technologies and processes for recycling waste papers.

## General

- Prenormative research on wood, cork and paper.

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Organisation of wood based products research in Spain.

## R&D FUNDINGS

### 1 - Public Fundings

- From Agriculture Ministry (directly available only to I.N.I.A.)
  - \* Sectorial program on agroindustry
- From University and Research Ministry
  - \* Program on agriculture

### 2 - Private Fundings

- From Trade and industrial associations
- Quality control

### 3 - CE Fundings

#### DG XII

- From FOREST Program
- From AAIR Program
- From STEP Program

#### DG XIII

- From SPRINT Program

# WOOD TECHNOLOGY

I.N.I.A.

## A - Organization

### 1 - Anatomy & wood properties

#### Personnel

- \* Researchers : 5
- \* Technicians : 1
- \* Assistants : 4

#### Laboratories

- \* Anatomy
- \* Dendrocronology
- \* Physical properties
- \* Mechanical properties
- \* Chemistry

#### Equipment

- \* INSTRON 1195 (10Tn)
- \* AMSLER 100 Tn
- \* 6 climatic chambers
- \* Different devices for testing physical properties

#### Ongoing research projects

- \* Eucalyptus wood processing (FOREST Project)
- \* Characterization of *Pinus sylvestris* from Central and Iberian Mountains
- \* Characterization of different hybrids and clones of Chestnut (FOREST Project)
- \* Dendrocronology of *Pinus* and Oak

### 2 - Primary wood processing

#### Personnel

- \* Researchers : 2
- \* Technicians : 2
- \* Assistants : 1
- \* Granted : 1

#### Laboratories

- \* Sawing
- \* Drying
- \* Pallets
- \* Peeling

#### Equipment

- \* HT dryer
- \* Kiln dryer
- \* Solar dryer
- \* Moldrup process dryer
- \* Laboratory devices for testing pallets, according to standards
- \* Lathe
- \* Sawmill

#### Ongoing research projects

- \* HT drying of the most interesting spanish sawnwoods
- \* Vacuum drying (MOLDRUP process) of spanish hardwoods
- \* Creep behaviour of MDF under cyclic humidity conditions

### 3 - Wood preservation

#### Personnel

- \* Researchers : 4
- \* Technicians : 3
- \* Assistants : 1

#### Laboratories

- \* Treatments
- \* Entomology
- \* Micology

#### Equipment

- \* 4 climatic chambers (annobium, termites, fungus, conditioning)
- \* Pilot plant for wood treatment
- \* Laboratory plant for wood treatment

#### Ongoing research projects

- \* Tannins and wood preservation (FOREST project)
- \* Application of ultrasonic and X ray methods in wood conservation (I.N.I.A. - I.N.R.A. project).
- \* Method non destructive of control by ultrasonic techniques of the biodeterioration of wood (Programme plurianuel de recherche, Région Rhône-Alpes).
- \* Analisis and application of new desinfection methods in the conservation of cultural heritage (National project)
- \* Prenormative researchs in wood preservation (I.N.I.A. project).

## B - Research priorities

Among the research priority lines defined in the Research program on agriculture in Spain, I.N.I.A. has the following priorities :

- \* Characterization (chemical, physical, mechanical, technological) of fast growing species and/or with a high value.
- \* Prenormative research.
- \* Optimization of primary wood processing methods and quality control processes.
- \* New wood preservation processes (concerted projects).

## PULP & PAPER TECHNOLOGY

*I.N.I.A.*

### A - Organization

#### Personnel

\* Researchers : 5   \* Technicians : 1   \* Assistants : 8

#### Laboratories

- \* Paper testing
- \* Packaging quality control
- \* Pulping & Bleaching
- \* Recycling
- \* Surface paper improvement
- \* C.T.M.P. pilot plant

#### Equipment

- \* C.T.M.P. pilot plant
- \* Laboratory plant (digestors, refiners, flotation unit, bleaching devices, etc)
- \* Different devices for testing physical and mechanical pro-

erties of paper and packaging

#### Ongoing research projects

- \* Deinking process (Private fundings)
- \* Kenaf utilization as raw material for pulping industry
- \* Less contaminant bleaching processes (Private fundings)

### B - Research priorities

Among the research priority lines defined in the Research program on agriculture in Spain, I.N.I.A. has the following priorities :

- \* Identification and characterization of new fibrous raw materials and new applications
- \* High yield pulping processes
- \* Less contaminant bleaching processes for the pulping industry
- \* New technologies and processes for recycling waste papers

## CORK TECHNOLOGY

*I.N.I.A.*

### A - Organization

#### Personnel

\* Researchers : 2   \* Technicians : 1   \* Assistants : 2

#### Equipement

- \* 2 climatic chambers
- \* Universal testing machine
- \* Different devices for testing physical properties

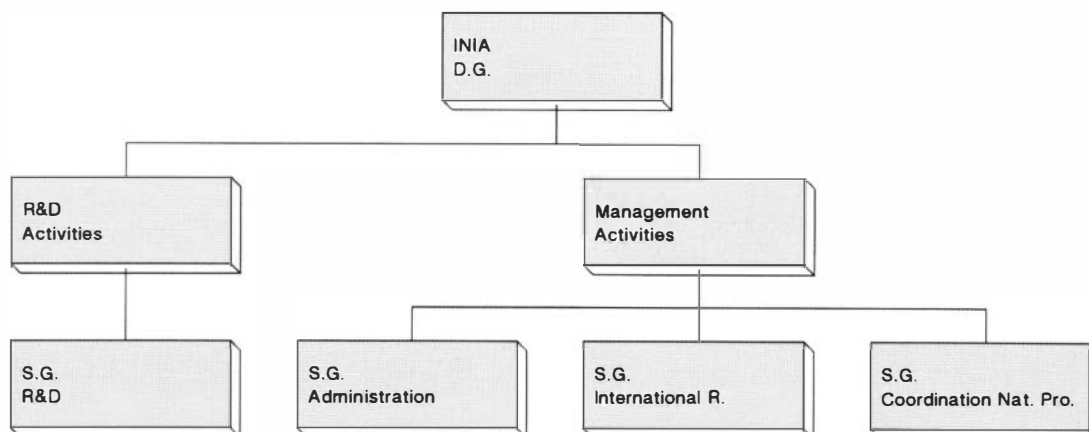
#### Ongoing research projects

- \* The quality of cork and cork stoppers (FOREST project)
- \* Cork agglomerates : characterization and new materials (FOREST project)

### B - Research priorities

Among the research priority lines defined in the Research program on agriculture in Spain, I.N.I.A. has the following priorities :

- \* Quality factors in cork. Characterization, standardization and grading
- \* New technologies, products and applications of cork
- \* Relations between cork and wine ("Cork-taste")
- \* Prestandardization research



**I.N.I.A.**