

Innovation in the Mediterranean forest biomass supply chains: The INFRES project in Catalonia

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Abstract (EN): The INFRES project promotes technological development and innovation in the forest biomass supply chains in the EU in order to make them more competitive and efficient. Its development in Catalonia has allowed identifying needs, showing innovative equipment, and detecting barriers to innovation and production in the forest biomass supply chain.

Résumé (FR): Le projet INFRES promeut le développement technologique et l'innovation dans les chaînes d'approvisionnement de la biomasse forestière dans l'UE afin de les rendre plus compétitives et efficaces. Son développement en Catalogne a permis d'identifier les besoins, de présenter des équipements innovants, et de détecter les obstacles à l'innovation et à la production dans la chaîne d'approvisionnement de la biomasse forestière

1. Introduction

INFRES is a European research project involving 23 partners from 8 EU countries. It aims at enhancing the efficiency of the biomass supply chain by promoting equipment and organisational innovation.



Press collector mounted on JD 1710 D forwarder

2. Forest machinery in Catalonia

Skidders

- 24 skidders in 21 companies
- Would mobilize c. 15-20% of the wood
- Competing with conventional tractors equipped with winches, more widely used

Forwarders

- 20 forwarders in 10 companies
- Would mobilize c. 60% of the industrial wood
- Fleet is partially devoted now to biomass
- Implantation is conditioned by the terrain
- Most are second-handed, 8 years old in average (Lloró 2013; Lloró & López 2014a & b)



Spatial distribution of the forestry machinery in Catalonia (Lloró 2013; Lloró & López, 2014a and b)

3. Needed improvements

- Most critical phases: extraction and transport (limited volumes and accessibility)
- Improvement of the efficiency in tree felling and following phases
- Transport of material, especially bulky
- Forest road network
- New business models (e.g. ESCOs)

4. Studies and demonstrations

- Chipper blade wear study
- Moisture monitoring in biomass log stocks
- Demonstrations:
 1. Accumulating felling head (5-6-2013)
 2. Extraction with synthetic rope(9-5-2014)
 3. Press collector on forwarder (27-3-2015)

Other demonstrations proposed

- Skidding with aerial cable
- Pneumatic discharge of wood chips
- Direct production of wood chips for pellets
- In situ* screening with mobile equipment
- Moisture monitoring of wood chips
- Efficient drying of wood chips



Demonstration of the Naarva Grip EH28 accumulating felling head on 308D CR Caterpillar



Synthetic cable reel for demonstration purpose

5. Forest harvesting: Barriers and key issues (CAT)

- Administration: homogeneous guidelines, internal coordination
- Road network: Polyvalent infrastructure. Need for planning and maintenance
- Society: Improvement of communication messages and channels
- Sector: Strengthening the bioenergy sector over large energy lobbies
- Others:
 - Professional training
 - Promotion of innovation and adaptation in the machinery sector, demonstrations

6. Innovation in the supply chain: Barriers (UE)

•**During the development of the innovations:** Costs and funding; Lack of engineering or capacity; Long and high-risk process; Testing; Regulations; Lack of quality components; Data protection

•**During the implementation/use of the innovations:** Low productivity or high costs; Inadequate conditions of application; Lack of flexibility; Competition with existing equipments; High investment; Maintenance and service; Marketing and others.



Chipper blade wear study

7. References

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