USE OF AGRO WASTES AND FORESTRY MATERIALS IN THE PRODUCTION OF PARTICLEBOARDS

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Introduction
The demand for forest products is increasing with the increase in population. This is raising the pressure on the natural resources. Agricultural residues are a promising alternative to virgin wood as an industrial feedstock for the production of wood-based panels. The demand for agro-residues as alternatives to woody cellulosic chips and fibres has risen recently due to the increased awareness of global deforestation and environmental concerns of burning the residues, and also because of the low cost of the residues compared to the virgin wood.

In the framework of the EU project MOBILE FLIP, various lignocellulosic materials were tested as alternatives wood in the production of particleboards.

Materials and methods
The materials tested were Scots Pine bark (SPB), Forestry residues (FOR), Reed canary grass (RCG), Salix (SAX), Com Cobs (CCB) and Sunflower seeds (SFS). All materials were provided by SLU in the form of chips. CHIMAR tested all of them separately and in mixtures in order to find their optimum use. Two fractions of them were evaluated (1-7mm long and 7-15mm long).

The particleboards were produced with a typical UF resin at pilot scale and a target density of 650kg/m³. For control, typical panels were prepared with chips from virgin wood of pine, poplar and beech.

RESULTS
It was found that amongst the experimental materials tested, Salix gave panels with the best mechanical properties while Forestry residues improved the thickness swelling. The formaldehyde content of these experimental panels were at levels close to that of typical panels produced with chips from pine wood. The dimensions of chips do not change the comparison results.

CONCLUSIONS
Making particleboards from agricultural residues is a promising solution to saving virgin wood. However, such panels are mostly suitable for interior applications. Among the materials tested Salix and Forestry residues may be considered as the most promising candidates for substitution of virgin wood in such an application.

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