Workshop CRA-ING

Sviluppo prototipale di macchine per la raccolta di colture a fini energetici

- transplant
- crop protection
- harvesting
- storage

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A mechanized system capable of reducing rhizome production cost has been developed. The solution proposed involves the use of a modified stump grinder able to section and dig up rhizomes directly in situ. This operation would make the subsequent harvesting and packaging much easier.

**Mechanization of Rhizome Extraction in Giant Reed (Arundo donax L.) Nurseries**

A. Assirelli, E. Santangelo, R. Spinelli, A. Acampora, S. Croce, V. Civitarese, L. Pari

Crop protection: Designed and developed of system for poplar cutting detection

A photoelectric and capacitive sensor was developed to be used for the identification of poplar cutting. The first results have evidenced the great accuracy of the testing apparatus adopting the same speed used by commercial intra-row hoeing.

COMPAG-D-14-00319R1 to be published in the Computers and Electronics in Agriculture Journal “Evaluation of sensors for poplar cuttings detection to be used in intra-row weed control machine” Alberto Assirelli, Paolo Liberati, Enrico Santangelo, Angelo Del Giudice, Vincenzo Civitarese, Luigi Pari
One of the main constraints hindering the cultivation of fiber sorghum is the lack of an efficient harvesting method for dry matter. Over the years, CRA-ING has introduced various technical improvements that greatly improved the field drying of fiber sorghum.

AN INNOVATIVE SYSTEM FOR CONDITIONING BIOMASS SORGHUM [Sorghum bicolor (L.) Moench.]

A. Assirelli, S. Crocc, A. Aceamora, V. Civitarese, A. Suardi, E. Santangelo, L. Pari

Transactions of the ASABE, 2013, vol 56(3): 829-837
Harvesting: *Arundo donax*

A new prototype is designed and developed in order to improve the storage of fresh matter by increasing the particle size distribution of chips.

Prototype CRA-ING/Spapperi

“A new prototype for increasing the particle size of chopped *Arundo Donax* (L)” submitted to Biomass and Bioenergy Journal
The experimentation started the last spring. It aims at evaluating the suitability of the modified self-propelled forage harvester for the harvesting of different species cultivated as SRF crops. The species are the following:

- European Poplar
- American Poplar
- Eucalyptus
- Melia
- Fraxinus

YBENG-D-14-00285R2 to be published in the Biosystem Engineering Journal

“Effect of Short Rotation Coppice Plantation on the performance and Chip Quality of Self-Propelled Harvester”
**Harvesting: Pruning residues**

A new prototype is designed and developed in order to increasing the particle size distribution of pruning chips for improve the logistic chain and storage.

*Developed and first test in Italy*
Harvesting: Lodged crops

The lodged crops with high vegetation development (Es. Fiber sorghum and Maize) is a serious problem for mechanical harvest and responsible of high losses. CRA-ING has developed a prototype of head for self propelled forage harvester and/or reversible tractors able to lift, cut and conveyor plants.

2014 first tests with reversible tractor
Unloading silobag system

The silobag method, little known yet in Europe, but is a safest and economic way for storing grain other dry materiel. This system is also adopted for fresh matter (Es. Corn, sorghum, ecc.) for silage but the unloading of the silobag is not yet mechanized. CRA-ING has developed a prototype of unloading machines able to crumble and convey the material in a pile, trailer or truck.

2014 first tests with the last version
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Thank for your attention

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