EIP-AGRI Workshop 'Opportunities for Agriculture and Forestry in the Circular Economy'

28-29 October 2015
Naantali, Finland

All information of the workshop available on www.eip-agri.eu at the event webpage

https://ec.europa.eu/eip/agriculture/en/content/eip-agri-workshop-opportunities-agriculture-and-forestry-circular-economy

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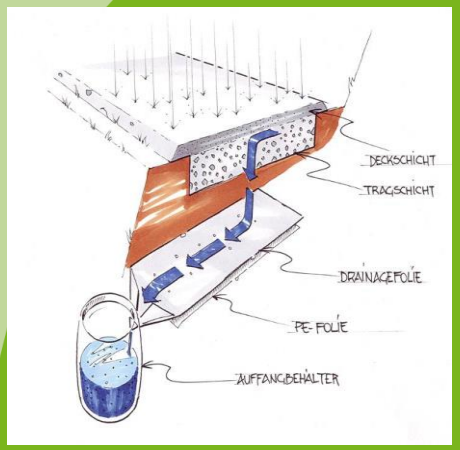
Development of innovative processes for wood ash recycling

DI Felix Montecuccoli



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Motivation: (Holistic) Renewable CO2-Cycle

General Information

- Start of the Project: December 2009
- Project Costs: 1,55 Mio. € (~60% FFG Sponsorship)
- Promoter and Management: Association of Wood Industry on behalf of FHP (Forest – Sawmills - Pulp and Board Industry Kooperationplatform)
- Scientific Management: Prof. DI Dr. Ingwald Obernberger; University of Natural Resources and Life Sciences/ Vienna
- Scientific Partners:
  - BIOS BIOENERGIESYSTEME GmbH
  - BIOENERGY 2020+ GmbH
  - Chamber of Agriculture Styria
  - 12 partners from the forestry-, wood-, paper- and construction industries

Project Aims in Detail

- Investigation, development and evaluation of new and practicable wood ash utilization
  - short-rotation-coppice fields
  - (Forest-) Road Construction
- Improvement of already known wood ash utilization routes
  - Establishing of sustainable meaningful addition of wood ash in composting
  - Investigation and assessment of the application technique in forestry
- Investigation and assessment of the entire process chain from biomass heating plant to utilization with the aim of fully worked out solutions for the investigated recycling processes of wood ashes from burning of biomass to ash application
  - Guidelines for wood ash utilization in practice should be created
- Examination of the outdoor storage of ashes and the basics of the "aging" of wood ashes and their environmental impact
- Monitoring of biomass-fuel and ash data
- Elaboration of recommendations for the modification of existing respectively the creation of new legal frameworks

Motivation

- Increasing the choice of practicable methods for recycling of wood ash
  - Increase flexibility respective to ash utilization for plant operators
    - Operators are often farmers or groups of farmers

- Investigation, development and evaluation of new and practicable wood ash utilization in agri and forestry instead of costly desposal.

- Amount of wood and straw ash in Austria 2007: 170.000 t
- Disposal of ash 2007: 93.499 t
- Utilization of ash 2007: 76.501 t

(under the assumption that the ash, which is not deposited, will be utilized)

Present Utilization Potentials in Austria

- (conservatively calculated):

▪ Application on short-rotation-coppice fields	30.000 t/y
▪ Potential in composting	40.000 t/y
▪ Potential in renovation of forest roads	412.500 t/y
▪ Potentials of forest road construction	93.500 t/y
▪ Potentials of other road construnction	150.000 t/y
▪ Forest-fertilization	100.000 t/y
	∑ 826.000 t/y

- In 2014: 4.000.000 ha forest; total harvest 17.088.552 fm and 5.058.832 fm burned fuelwood;

Wood ash utilization

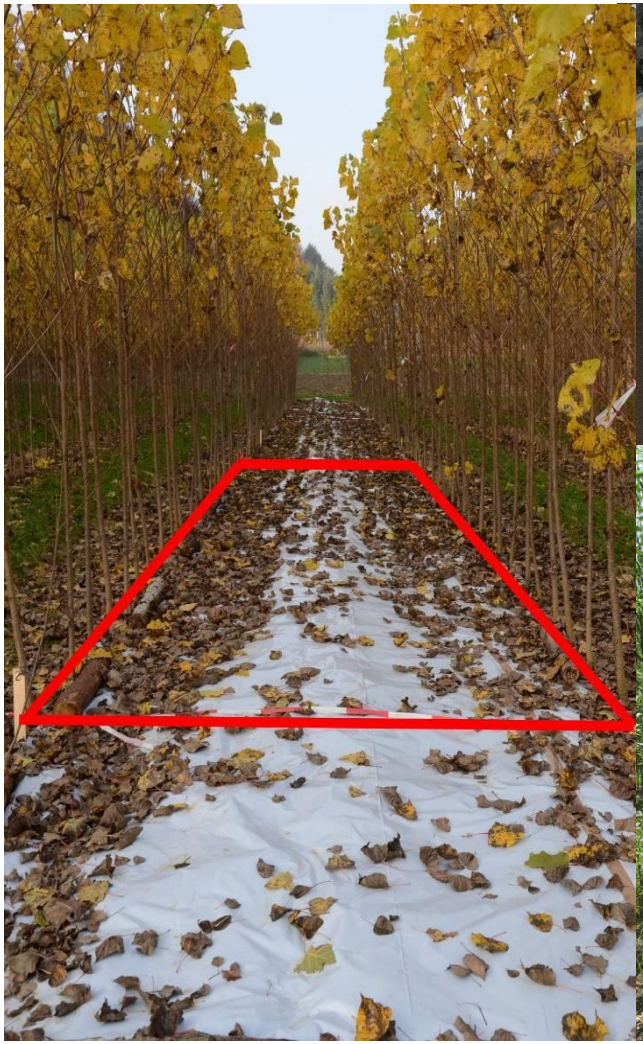
Selected results from the previously conducted scientific work

Use of wood ash in short rotation coppice (SRC)

- Aims:
  - Ecological assessment of the use of wood ash on SRC (soil, biomass)
  - Contained nutrients in the ashes should be returned to the narrowest possible circulation
  - Assessment of the effects of the use of wood ash on SRC and on the yield of energy wood cultures
  - Assessment of the potential of heavy metal discharge from SRC by ash fractionation

- Status Quo:
  - Minor differences between versions of artificial fertilizers, wood ashes and the zero-variant
  - In April 2010 planted crops (poplar and willow) were harvested in November 2013
  - Thereafter, analysis of biomass and soil, evaluation and review

Short-rotation coppice-fields



Use of wood ash in road construction

- Aims:
  - Development and evaluation of wood ash as a binder in road construction (used for stabilization in the body)
- Status Quo/ Results:
  - ➢ Technical Asessment and economical evaluation completed positively
  - ➢ Ecological Assessment in progress (positive trend)

Optimization of ash Logistics

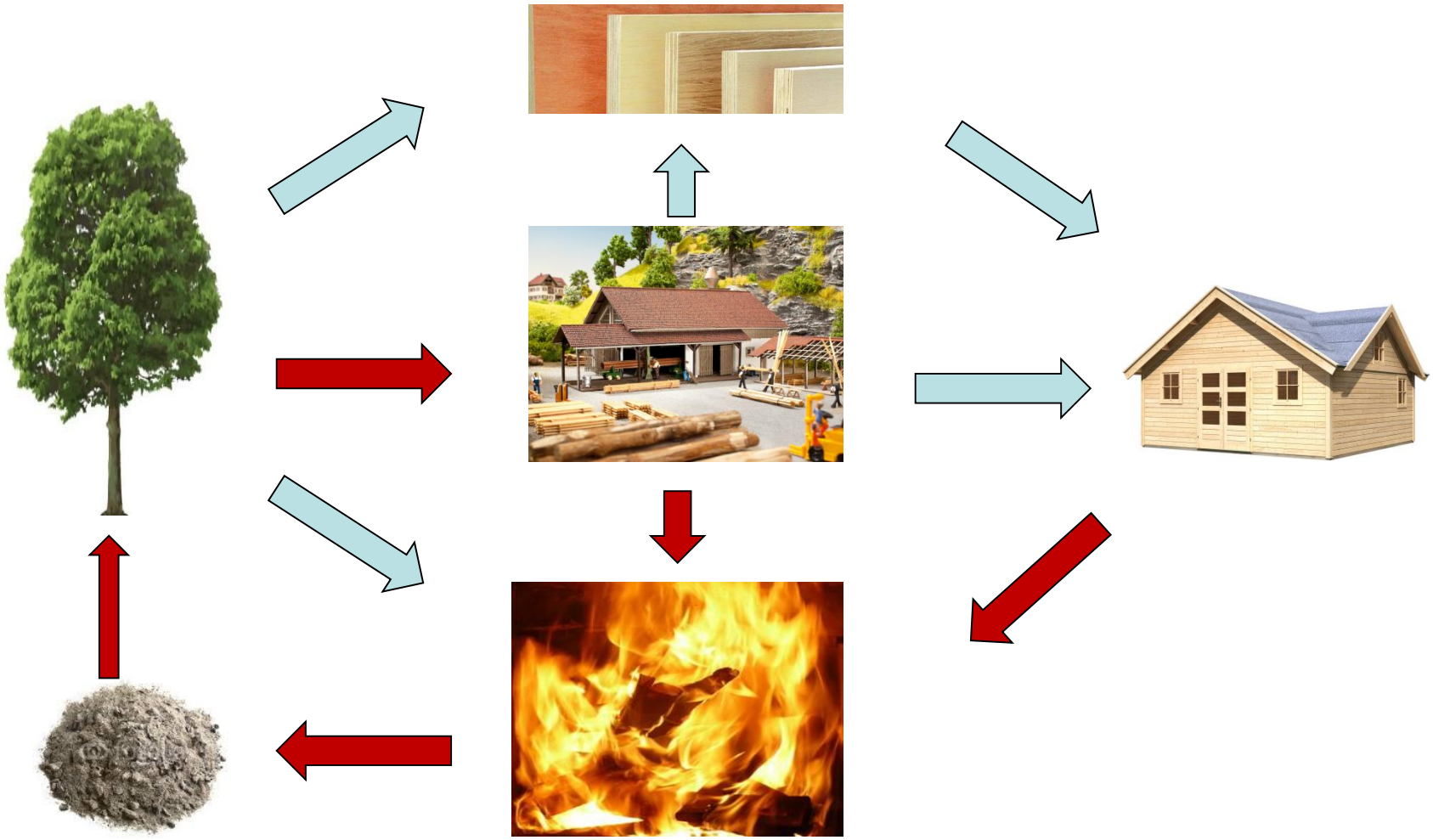
- Focus on the storage, transport and application of ashes

- Vulnerability analysis in ash logistics and storage
- Investigation and assessment of ashes stored outdoors on the physical and chemical properties (“aging” and “curing”) of the ashes and on the environmental impact
- Definition of the optimal process from heating, storage, transport and conditioning for each investigated recycling method
- Definition of quality requirements for the ash for each investigated sampling taking into consideration the technical, environmental and economic requirements
- Definition of selection criteria from the perspective of ash producers and from the perspective of ash recyclers

Future Outlook

- Continuation of the exchange of experience with international experts
- Implementation of an international workshop
  Completition of the economic assessment of all studied ash utilization methods
- Discussion of the project results with the responsible legislative bodies
- Identification of and proposals for necessary changes in legislation (waste / fertilizer)

Future Outlook – Holistic Ash-Cycle



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Thanks for your attention !

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