

## Abstract

### Carbo-Mob: a prototype for mobile carbonization via pyrolysis - ideas, methods, experiences and present stage -

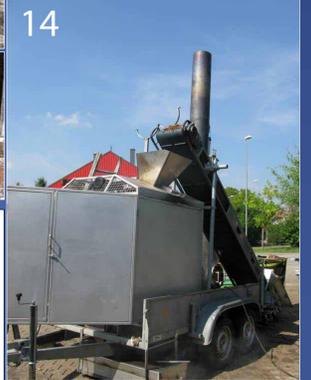


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Innovationsfonds:



1. Combustion techniques of woody waste biomass for energy production do not always offer useful solutions. At events like inaccessible sites, low woody content or low material amounts carbonisation might be favored. To test this idea a mobile prototype, called Carbo-Mob, was constructed in the South-West of Germany. Since 2012 it is tested „on and off road“ for shredded material from landscape management and other events.  
2.-3. The central unit is a rotary hearth furnace constructed for carbonisation by BiG Ltd (Australia) drying and charring biomass chips in top down manner through several floors.

4.-5. Several cubic meter were carbonised by the Carbo-Mob prototype (production rate dm: 30 kg biochar from 100 kg chips)  
6.-9. Orchard tree biochar was mixed with freshly cut green waste at 10 Vol% (purpose: loading of the biochar with nutrients; bio-activation etc.)  
10.-11. Open air composting (March-June) with and without biochar as control; temperature curves during process; measurements from samples of the resulting compost nutrient content, risky loads (heavy metals etc.) and bio-agreeability (by standardized earthworm flight tests; s. inset)  
12. Easy firing process  
13. Publicity grows  
14. No smoke during normal carbonisation phase



### Closed loop field trial

### Organic fruit farming: cycling between cut orchard trees, mobile carbonisation and co-composting with biochar

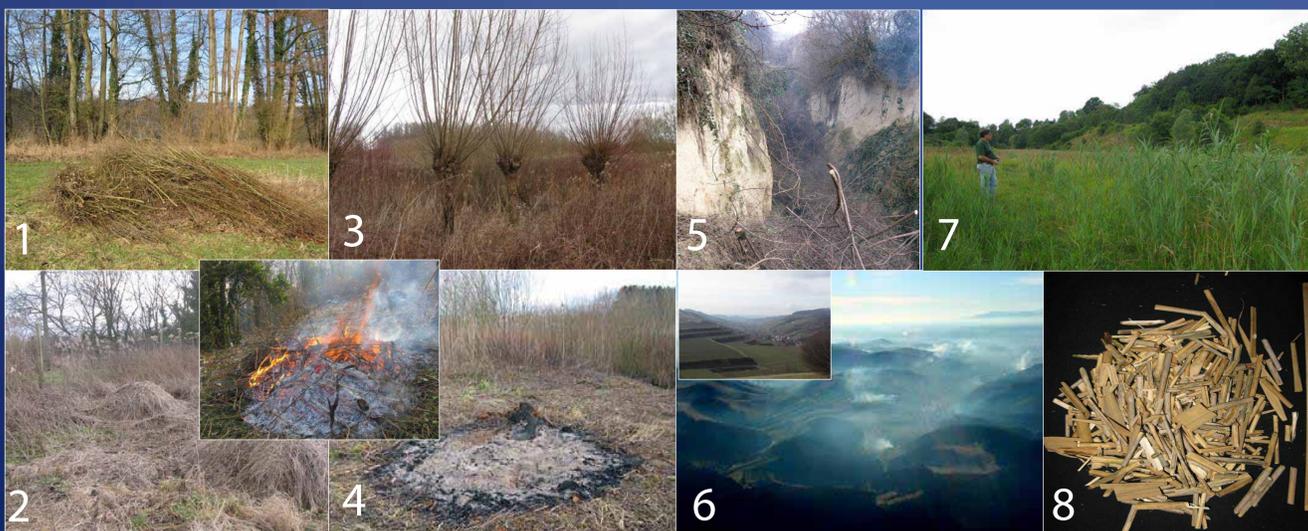
1.-3. Clearances on an organic fruit farm in Southern Germany produce large amounts of wood chips every year  
4.-5. Several cubic meter were carbonised by the Carbo-Mob prototype (production rate dm: 30 kg biochar from 100 kg chips)  
6. Orchard tree biochar was mixed with freshly cut green waste at 10 Vol% (purpose: loading of the biochar with nutrients; bio-activation etc.)  
7.-8. Open air composting (March-June) with and without biochar as control; temperature curves during process; measurements from samples of the resulting compost nutrient content, risky loads (heavy metals etc.) and bio-agreeability (by standardized earthworm flight tests; s. inset)  
9. Several months after the output of both compost variants back in orchards the future question is if these variants caused different impact on earth worms as a group of soil biota having a central function for soils. Their activity will be determined by the frequency of earth worm droppings (64-field-grid method published in German: [http://eprints.dbges.de/851/2/DBG\\_Beitrag\\_online\\_Publikation\\_23.10.12.pdf](http://eprints.dbges.de/851/2/DBG_Beitrag_online_Publikation_23.10.12.pdf))

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### Reducing emissions in landscape management

### Nature protection sites and landscape management in vineyards: can open fires be replaced by mobile pyrolysis?



Might these situations get help by mobile carbonisation?

1.-4. Iterative cutting on meadows  
a) Is the material useful for carbonisation?  
b) Can the drying of the material be supported by a specific, simple on-site storage technique?  
5. Landscape management in old hollow ways  
6. Slope management until each March in a famous wine-producing region (Kaiserstuhl, SW-Germany)  
7.-8. Reed is cut in winter time; utilization requested  
Emissions arising from fire management (CO, CH<sub>4</sub> etc.) could be considerably reduced by „closed carbonisation“

Most material from landscape management is not used for heating energy due to low amounts and missing suitability of the material.

Would mobile carbonisation offer a better solution?

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