A SPECIAL IPC[1] WORKING PARTY ON COMMUNICATION AND OUTREACH (WP-COM) HIGHLIGHT SERIES:

'GLOBAL APPLICATIONS OF FAST-GROWING TREES IN AGROFORESTRY SYSTEMS'

Short Rotation Coppice Combined with Poultry Breeding and Homegardening

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Overview

A small-scale agroforestry system consisting of fast-growing trees (FGTs) and a poultry brood was established gradually from 1999 to 2004 for self-provision of woodchips, vegetables, and eggs/meat in the Czech Republic. The 0.6-ha system is the result of a partnership between a family farmer and the Silva Tarouca Research Institute and is divided into four parts: 1) a clonal test of poplars and willows (36 genotypes; 10,000 stems ha^{-1}); 2) short rotation coppice (SRC) for firewood and woodchips using the top five poplar and willow clones; 3) a stoolbed for production of cuttings (i.e., planting material); and 4) a home garden for vegetable production.

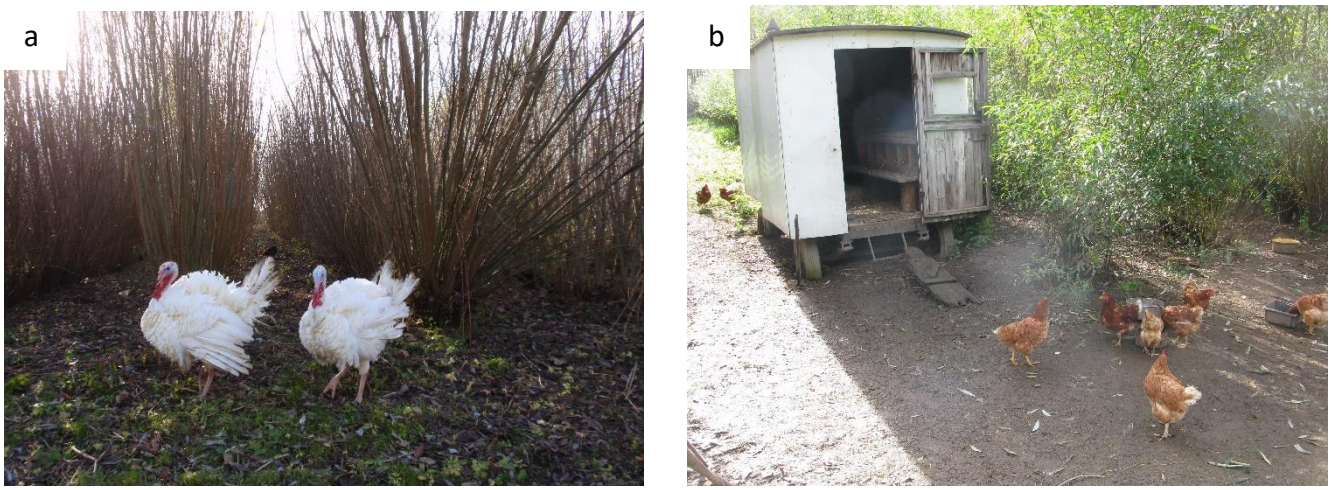

Figure 1. a) Turkeys and b) chickens raised in a short rotation coppice agroforestry system.

In 2004, the landowner started locating poultry close to the plantation, and she found that hens and chickens entered the plantation, not only to feed on insects and plants, but also to protect themselves against birds of prey (e.g., Eurasian sparrow hawk, *Accipiter nisus* L.). A typical poultry flock consists of 20 to 30 hens with one cock and several specimens of ducks, turkeys, and geese (Fig. 1a). Now, a henhouse with water and a feeder is located inside the plot (Fig. 1b). Poultry are fed with locally produced cereals and some commercial pellets *ad libitum*. The agroforestry system is fenced and is registered as SRC, which is suitable for direct payments under the European Union's Single Area Payment Scheme (EU SAPS).

[1]The International Commission on Poplars and Other Fast-Growing Trees Sustaining People and the Environment (IPC)

All photos by the authors.

Outcomes

After 17 years of agroforestry combining SRC with poultry, soil parameters in the topsoil (5 to 15 cm) exhibited positive trends for pH, phosphorus (P), potassium (K), calcium (Ca), and magnesium (Mg) despite a lack of fertilization and tree biomass being removed throughout the course of five harvests (Fig. 2a). In addition, the closed canopy of the SRC improved poultry welfare by lowering temporal variations of air temperature and humidity, especially on hot days, and by providing shelter against birds of prey (Fig. 2b). As a result, combining poplar and willow SRC for biomass production with poultry breeding can be recommended for its integrated positive effects on soil, microclimate, poultry welfare, and adaptation/mitigation effects.

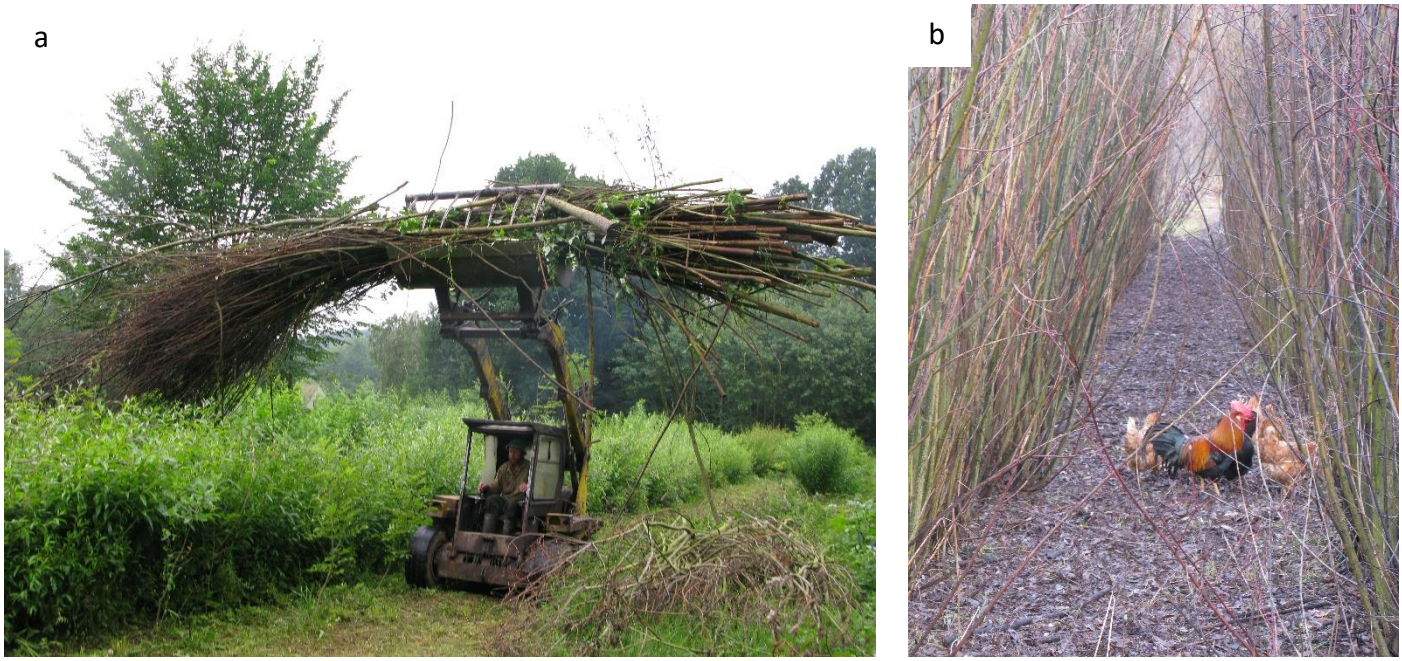

Figure 2. a) Harvesting of willows from a short rotation coppice agroforestry system, and b) free range chickens in an agroforestry willow plot.

Keywords: Poplar, willow, chickens, turkeys, poultry welfare, soil health, microclimate

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