

FICHE – AGROFORESTRY CASE

“COMMERCIAL ORCHARD WITH FREE-RANGE POULTRY IN NETHERLANDS”

Data extracted in May 2021

Note to the reader: This set of *fiches - agroforestry case* is offering additional information to the meta analysis literature review summarised in *general fiche* and set of *fiches* of the environmental aspects of AGROFORESTRY. Each individual case describes an agroforestry system within the European Union, delivering more detailed information on application and management practices.

1. DESCRIPTION OF THE AGROFORESTRY SYSTEM

Geographical location	Netherlands
Climate zone	Maritime
Geographical level	Farm
Description	In this example, apple trees were incorporated into a free range poultry system. The trees were planted to ensure animal welfare while returning the investment made for providing shelter to chickens in the free range areas.
Key descriptors	<ul style="list-style-type: none"> • Animal welfare • Disease control (eating leaves infected by scab and insects; less water birds enter due to tree cover decreasing risk of avian influenza virus) • Increased biodiversity (trees provide feed for pollinators) • Carbon sequestration • Additional income • Sustainable intensification of agricultural area
Agroforestry system	Silvopasture: poultry in orchard
Production system	Permanent crops: organic apples; livestock farming: organic free-range poultry
Actors involved and governance	Dutch organic farm with 6,000 laying hens and 6,800 apple trees achieved a yield of 40-50 tonnes of apples/ha, a good performing orchard. Two apple varieties grown for direct consumption and juice. To ensure proper orchard management fruit farmer rented free range area from organic farm.
Project type	Part of the AGFORWARD research project funded by the European Union's Seventh Framework Programme for research (No 613520)
Project status/ date of report	November 2017

2. LAYOUT OF THE AGROFORESTRY SYSTEM



This 1.4 ha orchard in a 2.4 ha free range area provides enough shelter for chickens to travel up to 200m from their base (This picture was taken at 100m). Ref: Louis Bolk Institute



3. AGROFORESTRY PRACTICES AND THEIR SUSTAINABILITY TRADE-OFFS

Chickens introduced to commercial organic apple tree orchards	
Sustainability trade-off	<ol style="list-style-type: none"> 1) Chickens kept outside show signs of reduced stress (less pecking). Chickens with full feather cover need less feed to maintain their body heat, decreasing in turn the resource needs of the production system. 2) Chickens can have a negative impact on tree growth, as the picking might cause the soil to be bare, compacted and high in manure. This in turn might increase the proportion of apples with sunburn damage and the proportion of rotten apples. 3) Different apple varieties responding to the different soil conditions (close and far from chicken house), might result in different marketing outlets.
Key barriers	<ol style="list-style-type: none"> 1) Planting and managing a commercially viable apple orchard demands special expertise. Every fruit species has particular needs and some will require additional investment. For example, cherry trees require netting for protection against birds. 2) Soil compaction, increased moisture and chicken manure in close proximity to chicken house can impair tree growth and apple production.
Success factors	<ol style="list-style-type: none"> 1) Seek advice before planting: hire a fruit advisor or rent your land to a fruit farmer and let him/her advise or even decide which varieties and trees are suitable to situation. 2) Adapt varieties and layout to the different conditions within the orchard. Close to the chicken house, it is more appropriate to plant cheaper and more robust species or rootstocks with more growth potential. In a range area, bigger and older trees, than those which would be suitable for an orchard without chickens, need to be planted. It is sensible to plant 2-3 apple varieties, since they may react differently to seasonal changes and the presence of the chickens. Planting several varieties also spreads the risks of diseases. 3) Organic production, led to fewer conflicting interests between poultry and tree management, because no chemicals are used in the orchard.

4. SOURCES, PROJECT WEBSITE OR DATA COLLECTION ON THE CASE STUDY

[Commercial apple orchards in poultry freerange areas - Increase revenues from your investment in animal welfare | EURAF \(utl.pt\)](#)

[Louis Bolk Instituut - Agforward: Agroforestry in Europe](#)

Bestman M, de Jong W, Wagenaar J, Weerts T (2017). Presence of avian influenza risk birds in and around poultry free-range areas in relation to range vegetation and openness of surrounding landscape. *Agroforestry Systems*. Doi: 10.1007/s10457-017-0117-2

Timmermans B, Bestman M (2016). Quality of apple trees and apples in poultry free range areas. 3rd European Agroforestry Conference. May 23-25, Montpellier, France. pp. 420-423.

Timmermans B, Bestman M (2017). Quality of apple trees and apples in poultry free range areas. Season 2016. Report Louis Bolk Institute 2016-031 LbP.