

Work-package 5: Agroforestry for livestock systems

Specific group: Agroforestry for poultry systems in the Netherlands

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Location of meeting: Two locations near Winterswijk, The Netherlands

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1. Context

The AGFORWARD research project (January 2014 - December 2017), funded by the European Commission, is promoting agroforestry practices in Europe that will advance sustainable rural development. The project has four objectives:

- 1) to understand the context and extent of agroforestry in Europe,
- 2) to identify, develop and field-test innovations (through participatory research) to improve the benefits and viability of agroforestry systems in Europe,
- 3) to evaluate innovative agroforestry designs and practices at a field-, farm- and landscape scale, and
- 4) to promote the wider adoption of appropriate agroforestry systems in Europe through policy development and dissemination.

This report describes one of about 40 initial stakeholder workshops to address objective 2. Further details of the project can be found on the AGFORWARD website: www.agforward.eu

2. Description of system

In the Netherlands only a few commercial walnut plantations exist. At the same time approximately 2,300 hectares of poultry free range area exist. Two farms are known to combine both activities: (1) an organic poultry farm with 11,500 laying hens and 30 (nearly 70 years old) walnut trees, and (2) a poultry farm with 10,000 hens and 100 young (not yet productive) walnut trees. However, the field visits described in this report were at two other locations since these were regarded as more illustrative for several reasons.

3. Participants

Invitations for the meeting were sent by email to over 100 organic and free range poultry farmers, advisors and people from hatcheries, feed mills and egg traders. The meeting was attended by nine people: five representatives from four farms with organic poultry, one poultry advisor, three persons from walnut plantations, one presenter and the organiser from Louis Bolk Institute. Of the five stakeholders who completed the questionnaire, four were involved in walnut or poultry management, and the fifth was the poultry advisor. The four poultry farms already had a number of multifunctional plantations (grapes, walnuts, miscanthus) in their free range area, but were interested in planting more. One participant was aged 35-50 and the others were aged 50-65 years old. The gender mix was three women and six men. Some stakeholders travelled nearly two hours to attend the meeting.

4. Introduction session

The meeting took place in the field and comprised a welcome by the organiser, a round table introduction to all attendees, an introductory presentation about walnut plantations by an agroforestry expert, Anne Oosterbaan (Alterra Wageningen UR) and a walk through two plantations with the owners (Figure 1). The questionnaires were filled during the break between the two walnut plantations. The meeting lasted from 15:00 until 18:00 hrs.

The presentation about walnut plantations covered the reasons for multifunctional trees, the setup of the plantations, which were planted 15 years ago as part of an agroforestry project, and the experiences with the plantations so far.



Figure 1. Introduction of the meeting in the field

5. Walnut plantations

At the first plantation, the trees were planted 15 years ago, at a spacing of either 20 m x 20 m or 10 m x 10 m (Figure 2).



Figure 2. Twenty year old walnut trees planted at 10 x 10 m

The trees were bought as 5-years old seedlings, all from the commercial 'Broadview' walnut breed. The trees at 10 x 10 m grew faster and larger than the trees in the 20 m x 20 m arrangement. In the initial years sheep and young cows grazed under the trees and in the latter years the grass was mowed. At 15 years, the trees were about 7.5 m high, about half of their potential height when mature. The amount of walnuts depends on the weather in spring and varies from year to year. The walnuts are sold to local consumers and tourists, but the income is less than the labour costs associated with managing the trees and harvesting the nuts.

The trees in the second plantation (Figures 3 and 4) were bought 15 years ago as 5 year old inoculated trees, also from the 'Broadview' breed and all planted at a spacing of 20 m x 20 m. Half of the area was grazed by horses and the other half was mowed with a tractor. Although all trees suffered from a leaf disease, the plots demonstrated that the trees in the 'tractor mowed sections' were far less developed. One possible reason was that the pressure of the tractor on the soil, close to the trees, caused soil compaction and reduced soil aeration.



Figure 3. Twenty year old walnut trees planted at 20 m x 20 m and understorey grass grazed by horses



Figure 4. Twenty year old walnut trees planted at 20 m x 20 m and understorey grass mowed with a tractor

6. Oral comments at field visit

Questions raised at the meeting were about the husks being toxic, what to do with the walnuts (have them collected wet by consumers, collected dry and store by the tree owner, processed as oil and sell oil), the grass management, the likely profits and time elapsed before the first nuts can be harvested.

7. Ranking of positive and negative aspects of grazed orchards

The participants were asked to complete the AGFORWARD questionnaire, which sought to highlight the key positive and negative aspects of an agroforestry system comprising a tree species such as walnut and poultry. Five questionnaires were completed by seven people (including two couples). Despite the repeated explanation of how to fill in the questionnaires, not all of them were completed as expected. Everyone indicated what aspect of agroforestry was either positive or negative, but a rank was not provided. Therefore in Table 1 we only show the number of respondents that indicated (with a tick) whether an aspect was negative or positive, and used this count (i.e. number of responses) to rank each aspect in a category.

Concerning positive aspects of trees in poultry free range areas there was high consensus about higher animal health and welfare, production of timber/wood/fruits/nuts, project feasibility, and landscape aesthetics. Improved farmer image, higher diversity of farm products, and originality and interest also ranked highly (Table 1). Concerning negative aspects of trees in poultry free range areas there was consensus about labour and management costs, and problems of mechanization. There were more positive aspects noted than negative ones.

8. Qualitative written responses

Three respondents gave a written answer to the question: “what constraints and challenges could be addressed by changes to an existing agroforestry system or establishing a new agroforestry system?”

- Promotion of trees in poultry free range areas
- Identifying smart combinations of trees and poultry
- Management of the trees
- Costs and benefits
- Sustainable policy
- Subsidies that last over 6 years

Two respondents gave written responses to what were potential solutions or research themes:

- Look for profitable combinations
- Trust in entrepreneurs
- Subsidy for networks

9. Next steps

Two farmers indicated they are interested in collaborating; unfortunately two farmers were not available to participate in the project as a possible test farm (host and a farmer who is already in several projects).

Table 1. Positive and negative aspects of the agroforestry system as marked by five stakeholders

| Aspect | Positive | | | | | Negative | | | | |
|-------------------------------------|----------|---|---|---|---|----------|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Respondent | | | | | | | | | | |
| Animal health and welfare | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Landscape aesthetics | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Timber/wood/fruit/nut production | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Project feasibility | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| Diversity of products | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Farmer image | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Originality and interest | ✓ | ✓ | ✓ | ✓ | | | | | | |
| Climate moderation | | ✓ | ✓ | ✓ | | | | | | |
| General environment | | ✓ | ✓ | ✓ | | | | | | |
| Local food supply | | ✓ | ✓ | ✓ | | | | | | |
| Subsidy and grant eligibility | ✓ | ✓ | | ✓ | | | | | | |
| Tourism | | ✓ | ✓ | ✓ | | | | | | |
| Soil conservation | | ✓ | ✓ | | ✓ | × | | | × | |
| Income diversity | | ✓ | ✓ | | | | | | | |
| Losses by predation | | ✓ | ✓ | | | | | | | |
| Rural employment | | | ✓ | ✓ | | | | | | |
| Marketing premium | | | ✓ | ✓ | | | | | | |
| Timber/wood/fruit/nut quality | | | ✓ | ✓ | | | | | | |
| Tree regeneration/survival | ✓ | | | ✓ | | | | | | |
| Animal production | | | ✓ | ✓ | | × | | | | |
| Cash flow | | ✓ | ✓ | | | × | | | | |
| Crop or pasture production | | ✓ | ✓ | | | × | | | | |
| Disease and weed control | | ✓ | ✓ | | | × | | | | |
| Inheritance and tax | ✓ | ✓ | | | | | | × | | |
| Inspection of animals | | ✓ | ✓ | | | | | | × | × |
| Complexity of work | | ✓ | ✓ | | | × | | | × | × |
| Carbon sequestration | | ✓ | | | | | | | | |
| Control of manure/noise/odour | | | ✓ | | | | | | | |
| Market risk | | | ✓ | | | | | | | |
| Profit | | | ✓ | | | | | | | |
| Relationship between farmer/hunter | | | ✓ | | | | | | | |
| Runoff and flood control | | | ✓ | | | | | | | |
| Water quality | | | ✓ | | | | | | | |
| Administrative burden | | | ✓ | | | × | | | | |
| Crop or pasture quality/food safety | | | ✓ | | | | | | × | |
| Regulation | | ✓ | | | | | | × | | |
| Reduced groundwater recharge | | | ✓ | | | | | | × | |
| Labour | | | ✓ | | | × | × | | × | × |
| Business opportunities | | | | | | | | | | |
| Relationship between farmer/owner | | | | | | | | | | |
| Change in fire risk | | | | | | | | | | |
| Biodiversity and wildlife habitat | | | | | | | | × | | |
| Opportunity for hunting | | | | | | | | × | | |
| Mechanisation | | | | | | × | × | | × | |
| Management costs | | | | | | × | | × | × | × |

10. Acknowledgements

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