



Commercial apple orchards in poultry free-range areas

Increase revenues from your investment in animal welfare

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Why plant trees?

A free range area contributes to chicken welfare. However, chickens prefer range areas with shelter provided by trees, bushes or artificial structures. A farm with 10,000 chickens needs a range area of 4 hectares. Planting such a large area with trees is a big investment. Introducing commercial fruit trees is one way to add a valuable revenue stream. Every fruit species has particular needs and some will require additional investment. For example, cherry trees require netting for protection against birds. This leaflet explains the requirements of incorporating apple trees into a free range poultry system.



Two year old orchard in free range area
Ref: Louis Bolk Institute



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

Where, how and which trees to plant?

Planting and managing a commercially viable apple orchard demands special expertise. It is important to 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 your situation.

Apple trees need loose dry soil, therefore, conditions can be very challenging for apple trees growing near to the chicken house. In this area, 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.



Close to the chicken house the soil condition is compacted and wet due to chickens. Compaction of the soil by machinery will also impair tree growth and apple production. Ref: Louis Bolk Institute



Advantages

- Chickens kept outside exhibit signs of reduced stress, as evidenced by less pecking damage. Chickens with full feather cover need less feed to maintain their body heat.
- Where there is more tree cover, fewer water birds will enter. This is critical as water birds can transmit avian influenza virus.
- Apple blossom provides feed for bees and other pollinators. So, fruit trees contribute to biodiversity.

Pests and diseases

- Apples are susceptible to harm from weather, animals and disease. Some pests, like scab, may increase over years.
- Chickens may have a negative impact on tree growth, the proportion of apples with sunburn damage and the proportion of rotten apples. This might be caused by chickens making the soil bare, compacted or, possibly, the high amounts of manure.
- Chickens may reduce scab and pest insects by eating leaves infected with scab and insects.
- In organic production, there are fewer conflicting interests because no chemicals are used in the orchard that could be harmful to the chickens.



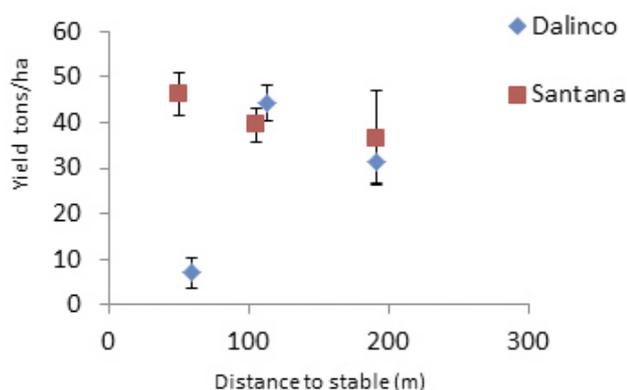
For food safety reasons neither the chickens nor their manure should have any contact with the fruit.
Ref: Louis Bolk Institute

Yields of apples

Investigations on a Dutch organic farm with 6,000 laying hens and 6,800 apple trees showed that a yield of 40-50 tonnes of apples/ha can be achieved. This good performing orchard is planted and managed by a fruit farmer who rents the range areas. The two apple varieties grown have to be harvested at different times. Planting several varieties also spreads the risks of diseases.

Tree management

The management of an orchard is seasonal. Pruning of trees is done in winter. Checking tree poles, thinning of blossoms and young fruits takes place in spring. In summer, tasks include checking for diseases and damage, organising material and labour for harvest, marketing, harvesting, sorting and delivering the apples. Sometimes the apples are processed into juice.



Yields of two varieties of 6-year-old apple trees on an organic egg production farm (2016)

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Further information

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.

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