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Thematic Field Visit –
'Nature Conservation in Rural Areas'

This report is a synthesis by Anton Gazenbeek, chair of the Eurosite-ELCN Agriculture, Biodiversity and Climate Working Group, of what was said and discussed by the hosts and participants during the field visit.

Although Cyprus has some large and/or intensive farms, most farms, especially in the mountainous interior of the country, are small. This interior is where specific high nature value farmland is found, e.g. in the Commandaria district north of Lemessos (Limassol), where this field trip went. Here, around the village of Laneia, the hills and slopes are covered by a mosaic of small vineyards, olive groves, carob groves and other cultures, separated or surrounded by hedges and other strips of natural/unused land.

It is this structural diversity which underpins the nature value. For instance, of the 56 species of butterfly occurring on Cyprus, 21 species can be found in the vineyard mosaic of this area.

However, agriculture is shrinking. Abandoned terraces can be seen everywhere – many were once vineyards.

They were farmed right up into the 1980s, when Cyprus had *circa* 30,000 ha under grapes and wine was a major product, much of it exported to the UK. Since then the export markets have disappeared and cheaper imports have even captured 2/3 of the domestic market. Vineyards now cover less than 7,000 ha. Half of all Cypriot farmers are over 55 years old and rural depopulation is happening all over the interior.

Most remaining vineyards are part-time affairs, combined with a salaried job elsewhere. The landowners carry on the work of their parents, who until some stage were still full-time farmers. That does mean a serious risk that some day the owners will abandon the vineyard. Competition for land between agriculture and housing development is an important issue, especially around villages. Laneia, for instance, is now inhabited by artists and retirees, in addition to the local residents. They have, it must be said, done a good job of renovating and restoring the traditional dwellings.

The Cyprus University of Technology has coordinated two recent EU-funded projects to test, evaluate and disseminate actions for conserving high nature value farmland and reducing the environmental footprint of farming there: Agrolife, from 2014 to 2017, and Ecowinery, which followed on and ended in 2021.

Laneia was one of the core sites for **the Agrolife project**, which focused on the mosaic landscape of carob groves and vineyards. The idea was to promote actions which would improve biodiversity and reduce the use of chemicals to suppress pests. It was interesting to hear how the farmers who joined the project and made their land available, responded to the project's measures. Here follow some examples:

- Soil in this landscape is very rocky and the bigger stones ploughed up were traditionally piled into stone walls , for soil stabilisation, or left as heaps. Amongst other purposes, stone walls comprise microhabitats for reptiles and invertebrates, but many have now collapsed from abandonment or lack of time or resources to repair them. Agrolife restored stone walls and planted various native shrubs in selected fields in their vicinity.

- Although this action was technically a success, some landowners (especially those with vineyards where the margins are covered by natural hedgerows) were sceptical, since the shrubs provided usually exist and grow naturally in the surroundings of their vineyards.

- Also, these plantings needed to be watered initially; and given that most vineyards do not have an irrigation system, it was challenging for the farmers, who relied on support from the project team. It became evident that maintaining margin vegetation is more feasible than trying to install new hedgerows or flowering strips within the field.

- In carob groves, under-tree grazing by goats and sheep is relatively profitable (thanks to the popularity of the halloumi cheese made from their milk). But, perhaps because of that, there is too often overgrazing, damaging vegetation and soil. On the other hand in abandoned carob groves, undergrazing increases fire risk, because of the accumulation of dead plants.

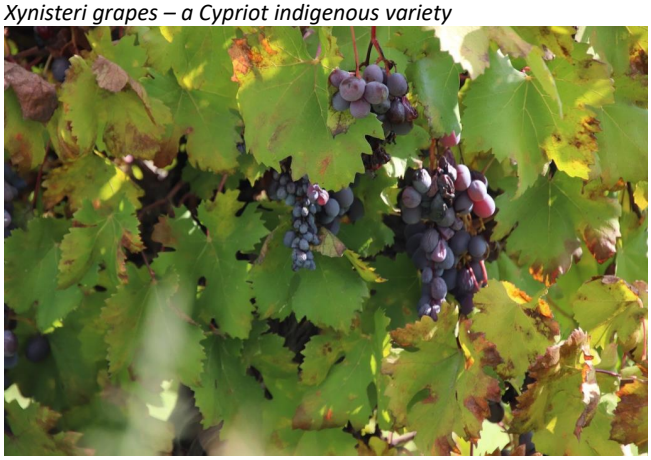
- The Agrolife project also restored traditional low-intensity grazing in the groves and by monitoring the effects of the implemented regimes on plant cover and soil, demonstrated the benefits of low-intensity grazing for plant biodiversity maintenance and for preventing soil erosion. Implementation of the results in practice is challenging, however, as it requires specific policy measures.

Unripe carob fruit

- Farmers traditionally use sprays against the grapevine moth (*Lobesia botrana*), which is a serious pest. Agrolife introduced pheromones as a non-polluting alternative. They are effective, but have two drawbacks from the farmer viewpoint: they are expensive (after Agrolife, pheromones were included in Cyprus' Pillar 2 CAP programme, but some farmers expressed the opinion

that the payments are too low to be considered an incentive). And farmers must collaborate - if you use pheromones and your neighbour doesn't, you'll still get insects proliferating and coming to your grapevines. The cost as well as the need for collaboration between farmers are an impediment to the wide application of the method.

Xynisteri grapes – a Cypriot indigenous variety



- Prunings from the vineyards are usually gathered and burned; the Agrolife project encouraged farmers to instead pile them up in heaps and leave them, as small wildlife habitat.

- As we witnessed, such piles of brash – old and new – are indeed still visible along the edges of fields, so this measure has been taken up.

- The vineyard owners plough the soil from time to time, then leave grasses and plants to grow back until the next ploughing.

- This is certainly better than using herbicide to keep the rows between vines open, but best for biodiversity would be to allow the natural vegetation to grow and mow it instead of cultivating the soil. However, it was not managed to convince landowners to leave the ground-covering vegetation alone. There were several reasons for this, one of which is cultural: a vineyard should look neat and tidy. But – and this is interesting – the farmers also argue that tall grasses and herbs, when dry and desiccate in summer, are a wildfire risk.

- Biological surveys by the project showed that the field margins had the highest diversity (plants, arthropods, birds, mammals), especially where they were marked by hedges of shrubs and trees.

- Such unused margins are gradually being lost from more 'efficient' farms in the plains. So their survival in the high nature-value hill landscapes is all the more sigificant.

- As mentioned earlier, the project planted native bushes in gaps along the field margins of participating farms, and strips of native flowering plants to provide food resources to beneficial insects.

This little list of bullet points above shows how practical interaction between conservation practitioners and farmer-landowners can clarify measures' degree of acceptance – which are accepted, which less so (and why; which can then lead to changes to overcome the objections).
A manual explaining these measures was written and distributed to farmers. The manual has also been downloaded from the project website www.agrolife.eu.

These measures could also be converted into agri-environmental contracts (AEC) with payments for farmers to deliver them. This would be a powerful stimulus towards having the project results taken up. But here the situation leaves much to be desired:

- Because the Paying Agency is increasingly using satellites to monitor CAP compliance, it currently prefers measures easily visible on satellite images. Brash piles are not easy to spot, so have not been considered for an AEC.
- Results-based payments were proposed as an alternative to the complexity of checking actions, but that would pose many difficulties in terms of assessing effectiveness and deciding on payment levels. Thus it was rejected by relevant authorities, which were particularly worried about how to prevent fraud, how to be absolutely sure that there is a genuine result.
- At the same time there were Pillar 2 grants to clear field margins, because of fire risk. This might make sense from that point of view, but it completely ignores the biodiversity value of the margins.

Experiment by Vlassides Winery to mature wine in an amphora, as done 2500 years ago - result to be sampled next field trip

The **Ecowinery project** (full title "Eco-innovation for the production of low environmental footprint wine") had no on-site actions, but developed a tool which vineyards can use to assess their environmental footprint and lessen it. For instance, its biodiversity metric can enable farmers to evaluate the effect of different farming practices on biodiversity conservation in and around vineyards and select options that conserve native flora and fauna.

Besides an extensive literature search, the tool was developed from practical project work in Cyprus. Thus to prepare the biodiversity metric, monitoring data from 36 vineyards of selected plants, insects, reptiles and birds was collected in 2020 and 2021.

Spontaneous monitoring during our field trip!

From this basis, the Ecowinery project produced a 42-page manual of best practices vineyards and winemakers can use to work towards a greener and more sustainable wine. This manual covers topics connected to grape-growing such as tillage, irrigation, fertilisers, landscape features and pest and disease control. But it also looks at the wine-making itself, with practical suggestions how to reduce energy inputs, save water, use more environmentally-friendly packaging and find more efficient methods to transport the wine to wholesalers and retailers.

Sustainable wine best practices manual

An example of such best practice found in the manual is implementing reduced tillage, to both minimize soil carbon dioxide emissions from rapid organic matter decomposition, as to reduce the energy input required for tractor work.

Or to prevent the eutrophication of soil and water by replacing standard fertilisers with animal manure and the sludge left over from pressing grapes in a winery (both of these are harmful for the environment if improperly disposed, so using them also tackles a waste problem). The use of both manure and sludge was demonstrated in the Ecowinery experimental vineyard.

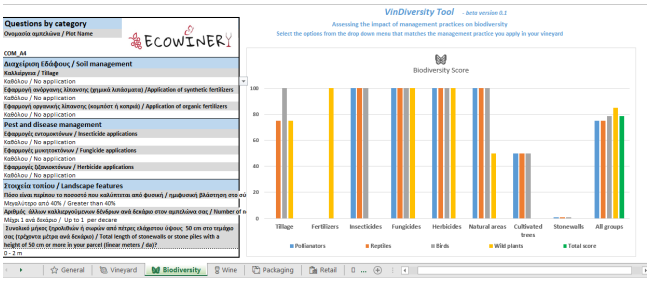
The Ecowinery Tool to assess the environmental and biodiversity impact of vineyard agriculture and wine-making was tested by the project on 8 wine-making farms and enterprises.

It takes the form of a spreadsheet where farmers can, for instance, fill in fertiliser or plant protection product application, split out by (bio)chemical type, in kg per decare (1 decare = 0.1 ha) .

Besides the interactive spreadsheet, the tool consists of a 30-page step-by-step guidance document, which explains to users how to work with the spreadsheet.

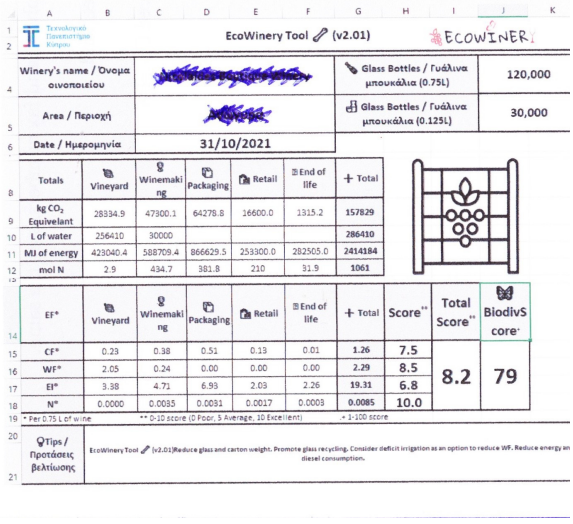
To give an idea what it looks like, the spreadsheet tool's “VinDiversity” page gives a biodiversity score (from 1-100) in terms of impact on reptiles, birds, pollinators and wild plants as a result of replying to questions like:

- Application of herbicide, fungicide, insecticide
- Ploughing and fertiliser use
- Percentage of semi-natural / natural areas on your land parcel
- Number of non-vine cultivated tree species in your vineyard per decare
- Total length of stonewalls or stone piles with a height of 50 cm or more in your parcel (linear metres)



Example of a filled-in VinDiversity page

In the same vein, the Ecowinery tool gives a quantified account of energy use (in megajoule) and emissions (in terms of carbon dioxide equivalent). This culminates in a climate, energy and recycling report card, with an overall score from 1-10. The report card also gives tips how the score might be improved. Here below is an (anonymised) report card from a Cypriot winery:



EcoWinery Tool (v2.01)

Winery's name / Όνομα οινοποιείου	[redacted]	Glass Bottles / Γυάλινα μπουκάλια (0.75L)	120,000
Area / Περιοχή	[redacted]	Glass Bottles / Γυάλινα μπουκάλια (0.125L)	30,000
Date / Ημερομηνία	31/10/2021		

Totals	Vineyard	Winemaking	Packaging	Retail	End of life	+ Total
kg CO_2 Equivelant	28334.9	47300.1	64278.8	16600.0	1315.2	157829
L of water	256410	30000				286410
MJ of energy	423040.4	588709.4	866629.5	253300.0	282505.0	2414184
mol N	2.9	434.7	381.8	210	31.9	1061

EF*	Vineyard	Winemaking	Packaging	Retail	End of life	+ Total	Score**	Total Score**	BiodivScore*
CF*	0.23	0.38	0.51	0.13	0.01	1.26	7.5	8.2	79
WF*	2.05	0.24	0.00	0.00	0.00	2.29	8.5		
EI*	3.38	4.71	6.93	2.03	2.26	19.31	6.8		
N*	0.0000	0.0035	0.0031	0.0017	0.0003	0.0085	10.0		

* Per 0.75 L of wine ** 0-10 score (0 Poor, 5 Average, 10 Excellent) * 1-100 score

Tips / Προτάσεις βελτίωσης: EcoWinery Tool (v2.01)Reduce glass and carton weight. Promote glass recycling. Consider deficit irrigation as an option to reduce WF. Reduce energy an diesel consumption.

Because the economic context is all-important (see above, second paragraph), Ecowinery also seeks to help farmers using the tool to brand and market their wines as environmentally-friendly and contributing to conservation of native wildlife.

It did so through building a knowledge base to be used in the future as the basis for a “Product Environmental Footprint (PEF)” label for quality. The project's 'Best Practices for an Eco-friendly Wine Protocol' describes the minimum acceptable vineyard and winery practices for a wine to receive the “Low Footprint Wine Quality Mark”.

Our footprints in a labyrinth of vines

Dr Savvas Zotos

The field visit participants were also introduced to the **Agroassist project,** which began this year. The project is a joint effort by the Cyprus University of Technology and its Greek partners. The objective is to build climate resilience into agricultural regions prone to desertification. The working areas are plains (Thessaly in Greece, Paphos and Mesaoria on Cyprus) used for crop farming and large-scale olive growing.

Learning from the Agrolife experience, this project takes the farmers' unions on board. They selected in advance the pilot fields and participating farmers, instead of the project management team going out and approaching individual farmers, who in several cases proved hesitant to continue with some actions.

On the chosen fields, Agroassist will apply no-till or min-till to the soil, and plant resilient hedges of deep-rooted species adapted to drought on burnt or degraded land. Drones, special cameras, and ground meters for temperature and humidity will monitor the effect on desertification. Replying to a question, 'why not use satellite images?', Dr Savvas Zotos referred to the cost and to available images being too coarse to spot the details Agroassist needs to see. When Paul Leadbitter from the northern England peat restoration coalition pointed out that they obtain and use high-resolution images, sharp enough to see drainage channels, free of charge, Savvas immediately asked for a bilateral follow-up to discuss this further. Eurosite twinning in action!

We finished the field trip by sampling some wines from high nature value farmland, including vintages from Cypriot indigenous grape varieties such as xynisteri and yiannoudi, at the Vlassides Winery....*ad fundum, et in vino veritas.*

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