



Alliance for
**Mediterranean
Nature & Culture**

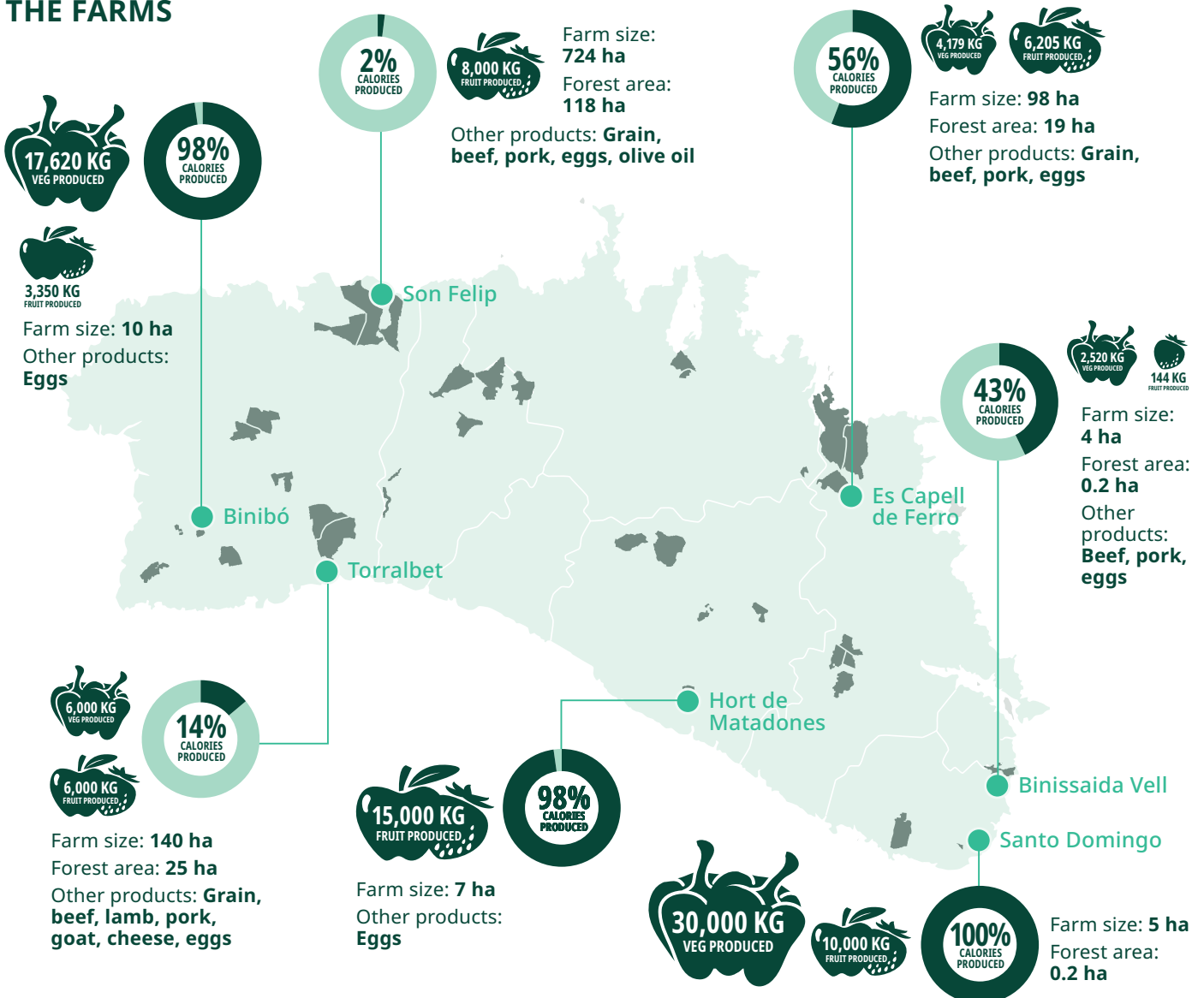
Many Paths · One Mediterranean

Foodnected

Ecological Footprint: fruit and vegetables from Menorca's Custòdia Agrària programme

We set out to calculate the Ecological Footprint of the fruit and vegetables produced on seven smallholder farms on the island of Menorca. All the farms are part of the Custòdia Agrària programme, and use sustainable management techniques. We then compared the average results with national Spanish figures for conventionally farmed fruit and vegetables. The study showed that the Menorcan model has a significantly lower environmental impact.

THE FARMS



Ecological Footprint

The Ecological Footprint is a method created by [Global Footprint Network](#) to measure human demand on natural capital. In this context, we're using it to measure how much of the planet's natural resources are required to produce a kilo of fruit and vegetables and make it available to consumers.

Biocapacity is the other side of the ecological balance sheet. It tracks the natural assets available to us, and their productivity.



[EF greater than BC] = Ecological deficit



[EF smaller than BC] = Ecological reserve



Custòdia Agrària

Custòdia Agrària – ‘Agrarian Stewardship’ – is [a programme run by GOB Menorca](#). It works with farmers on the island to support sustainable production models for everything from beef to fruit and vegetables, reducing negative environmental impacts while maximizing conservation benefits, and increasing the value and visibility of their products.

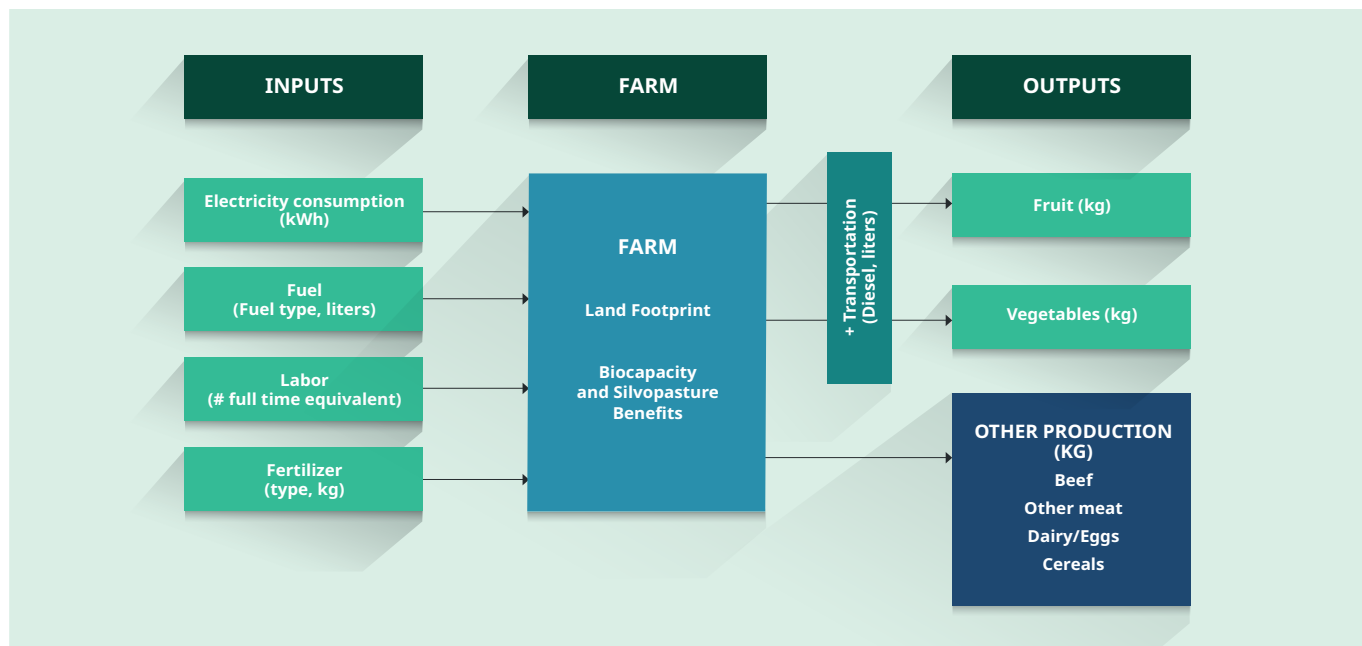
Calculating a farm's Ecological Footprint: a new perspective

This assessment is among the first to be applied at the whole farm level to quantify both the carbon emissions and the land appropriation due to fruit and vegetable production and consumption. It's also the first to quantify the positive impacts of land preservation and land stewardship practices, reflecting the contribution sustainable management makes to Menorca's biocapacity. Tree cover, for example, contributes to ecosystem maintenance and biodiversity, and therefore has a positive Footprint.

We calculate a farm's total net Footprint by quantifying the Footprint of all its inputs and outputs – this includes everything from the food needed to feed a worker, to carbon emissions resulting from transportation of products, to the land needed to raise livestock. Once a farm's total net Footprint has been calculated, we then determine how much of it is associated with fruit and vegetable production in relation to other farm outputs (meat, dairy, eggs). We do this by comparing the share of calories related to fruit and vegetable production to the total number of calories produced on the farm.



Figure 1. Inputs and outputs used in calculating a farm's total net Footprint



Calorie values

Many different types of fruit and vegetables are produced in Menorca, but disaggregated data was not available for all of the farms, so we calculated average calorie densities. Here's how we allocated them in relation to other farm products:

Product	Calories
Fruit and Vegetables	
Fruit (avg)	0.50 [kcal kg ⁻¹]
Vegetables (avg)	0.30 [kcal kg ⁻¹]
Other products	
Beef	2.48 [kcal kg ⁻¹]
Pork	1.98 [kcal kg ⁻¹]
Lamb	2.48 [kcal kg ⁻¹]
Cheese	3.50 [kcal kg ⁻¹]
Eggs	0.97 [kcal kg ⁻¹]
Milk	0.61 [kcal kg ⁻¹]



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Results

Fruit and vegetables: Main Ecological Footprint drivers

Productive land area – for growing the crops



Carbon uptake land area – to provide fuel, labour, fertilizer, transport



Average Footprint of 1kg of fruit and vegetables

(without biocapacity benefits of land conservation/stewardship)



7.2gm²*
Custòdia Agrària farms, Menorca

12.9gm²
National average, Spain

*Footprint is expressed in global square metres (gm²), representing the area of bioproductive land required to produce 1kg of fruit and vegetables.



Producing fruit and vegetables using Custòdia Agrària methods requires



44%



less of the planet's biocapacity

Land stewardship and conservation in Menorca



average Footprint of 1kg of fruit and vegetables falls to **4.8gm²**
66% lower than the national average

Four of the farms studied include significant forested areas, which directly contribute to ecosystem maintenance, and are spared from the increased agricultural intensification of conventional farming. When the intrinsically less impactful production process and the benefits of this land stewardship are taken into account, the average Footprint of 1kg of fruit and vegetables falls to 4.8gm², 66% lower than the national average.