



RISAIA DEL DUCA

BENEFIT COMPANY

ANNUAL IMPACT REPORT

2025

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1. INTRODUCTION

PROJECT RISAIA DEL DUCA: *A Circular Livestock Farming Model*

Risaia del Duca project began in 2018 with the acquisition of a long-established farm whose origins date back to 1840, when the estate belonged to Modena's noble House of Este. The original name, Risaia del Duca, was retained in recognition of this heritage.

The farm was relaunched with a clear ambition to apply the latest European Union principles and guidance on food quality, environmental stewardship and education for young people entering the agricultural and livestock sectors.

Its operating model follows circular economy principles to safeguard natural resources and protect the environment. The project brings together the different areas at its core: agriculture, livestock farming, the environment and innovation.

The underlying idea is to manage a livestock farm as effectively as possible from a business perspective, while also developing it into an educational and cultural hub for the agricultural entrepreneurs of the future. It is also intended to serve as a research centre for the agricultural, livestock and industrial sectors, working in partnership with the leading universities in the Emilia-Romagna region.

In line with these objectives, Risaia del Duca became a Benefit Company at the beginning of 2023. By amending its Articles of Association, the company formally committed to pursuing common benefit objectives linked to the development of a new business model based on environmental sustainability, social inclusion and ethical principles.

In 2025, Risaia del Duca moved forward with its long-term projects, supporting the farm's gradual improvement with a focus on reducing environmental impact and safeguarding natural resources. In 2026, the activities will focus on obtaining environmental certification, followed by B Corp certification. As planned, work continued towards environmental certification with the completion of an initial assessment. The assessment identified the need for further measures; as a result, specific management plans and, where necessary, corrective actions will be introduced for certain new areas of the company's operations.

The company's new commitments also include seeking formal recognition of the benefits it generates through B Corp certification. However, recent changes to the assessment methodology mean that the process is expected to take longer than originally planned.



Figure 10: Risaia del Duca

The principles behind our work provide a clear direction for future projects.

Guiding Principles and Areas of Action

The company's activities are shaped by a set of core principles that guide the development of future projects:

Protecting the Environment

- Reducing the use of chemical fertilisers
- Recovering and enhancing the value of organic matter
- Reducing pollutant emissions
- Improving energy efficiency in production
- Generating energy from renewable sources and farm by-products

Animal Welfare

- Optimising livestock housing management and facilities
- Ensuring appropriate animal nutrition
- Conducting systematic health checks

Food Quality

- Producing high-quality milk
- Adopting precision farming and livestock management practices

Staff Training

- Professional development programmes covering technical and management topics

Strategic Project Areas (Figure 1-1)

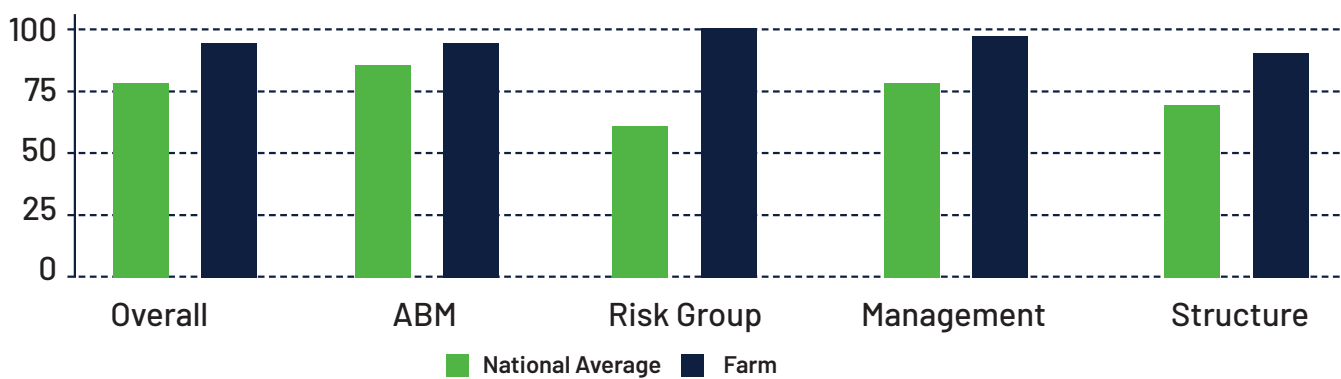
- Efficient management of livestock effluent for agricultural and energy use
- Adopting innovative agronomic practices to reduce the use of chemicals
- Promoting animal welfare through scientific research conducted in partnership with specialist universities
- Designing and developing green areas to enhance the landscape, the environment and the tourism potential of the area

2025 Results and Outlook

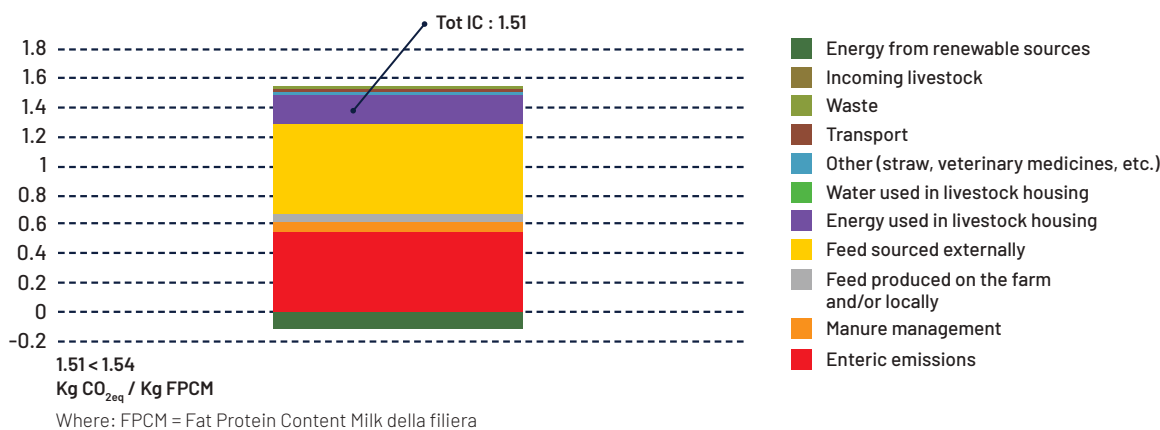
Throughout 2025, the farm further strengthened its core activities: producing high-quality cow's milk, cultivating cereals and forage crops for livestock feed, and generating energy from renewable sources.

The year brought significant progress and positive results across several areas of the business:

- As part of its ongoing commitment to animal welfare, the farm achieved strong results under the ClassyFarm assessment methodology, supported by doctoral research activities and
- collaboration with the University of Bologna. The indicators consistently exceeded the national average, while efforts continued to reduce the nitrogen-related impact of emissions.



- Research carried out with the Universities of Bologna and Ferrara explored how digestate use could be optimised to reduce nitrogen-related impacts. The results were encouraging: chemical fertiliser use was reduced while maintaining strong crop yields. On this basis, the trial will continue into a further phase to assess the scope for additional environmental and economic gains.
- A separate study, conducted together with the Centro Ricerche Produzioni Animali (CRPA), assessed the farm's carbon footprint for milk supplied to the Parmigiano Reggiano production chain. The findings showed that the farm's emissions were below the average recorded for Parmigiano Reggiano producers. The study also identified clear opportunities to further reduce the carbon footprint.



LIVESTOCK OPERATIONS

The farm currently manages a herd of approximately 50 lactating cows and 45 replacement heifers. Since 21 July 2021, the milk produced has been supplied to a local dairy for the production of Parmigiano Reggiano.

The cattle are housed in a free-stall system, with cubicles designed to provide maximum comfort and maintain high standards of hygiene and animal health.

The livestock facilities comprise three buildings: one for lactating cows, one for growing cattle and heifers, and a third housing the new calf-rearing unit, designed according to innovative criteria to support calf welfare and healthy development.

The livestock effluent is conveyed to a biogas plant, where it is used to generate electricity and heat for the farm's operations, including its district heating requirements. The digestate leaving the digester is separated into solid, concentrated and microfiltered fractions. It is then suitable for agricultural use, helping to reduce irrigation water consumption and the use of chemical fertilisers. Part of the solid fraction is also reused as bedding in the livestock housing.

In 2024, an industrial PhD research project was launched in collaboration with the University of Bologna and co-funded by the European Union to assess calf welfare during the first weeks of life. The aim is to establish new scientifically validated parameters that may support a review of current animal welfare regulations governing the housing of young calves. By comparing calves housed in pairs with those housed individually, and by analysing saliva samples and cortisol levels, the study seeks to assess their stress response under the different conditions.

The study is now nearing completion, but the intention is to continue the research through further trials in the future.



The farm covers approximately 100 hectares, most of which are used to grow forage crops, particularly alfalfa, for the herd. The remaining land is planted with cereals, including wheat, maize, barley and sorghum, under a crop rotation plan aligned with the guidelines of the Common Agricultural Policy.

An experimental section of the maize-growing area has been divided into microplots to test agronomic practices aimed at reducing nitrogen emissions, improving soil fertility and limiting the use of chemical fertilisers. The trials are being conducted in collaboration with the Universities of Bologna and Ferrara.

Precision farming technologies were further expanded in 2025, including georeferencing systems, satellite monitoring and drone-based monitoring. These technologies have made it possible to identify water or nutrient deficiencies with greater precision and target interventions only where needed, reducing resource use and environmental impact.

The farm also continues to use a micro-irrigation system that delivers water directly where required, limiting losses through evaporation and percolation. The same system has been adapted to apply the liquid fraction of the digestate directly to the fields, improving uptake and reducing nitrogen emissions into the atmosphere.

Together, these innovations have delivered significant environmental benefits in line with European climate objectives:

- **Reduced use of nitrogen-based chemical fertilisers**
- **Lower greenhouse gas emissions**
- **Reduced irrigation water consumption**



The farm's education and training activities expanded further through new applied research projects, internships and outreach initiatives. More specifically:

- Collaboration with the Universities of Bologna and Ferrara continued in 2025, focusing on the development of new processes for recovering nitrogen from livestock effluent. The aim is to improve agronomic practices and soil quality. Although still preliminary, the results are promising, and the research is expected to be completed by 2026.
- More than 350 people took part in workshops and seminars held at the farm.

Following the completion of the student accommodation, the farm began hosting secondary-school and university graduates for internship programmes. An **industrial PhD project** on animal welfare is also under way, with the aim of developing new protocols and indicators.

Training activities planned for 2026 include:

- Continuing the student placement and internship programme
- Maintaining the active industrial PhD programme
- Launching new training pathways

The proposed training programmes will focus on:

- Circular economy and sustainable development
- Agricultural and livestock production and management
- Sales techniques and product value enhancement
- Funding opportunities for agricultural businesses
- Environmental impact indicators (KPIs)

The farm also continued its knowledge-sharing activities, publishing four scientific articles on livestock effluent management and animal welfare and submitting an abstract to an international journal (see appendix). A further six articles are scheduled for publication in 2026.

2. GOVERNANCE

Risaia del Duca is a company controlled by WAMGROUP S.p.A.

Its governance model is built on transparency, efficiency and accountability, supporting sound management and a long-term commitment to sustainability.

The company is governed by a Board of Directors, which plays a strategic role in setting the overall direction of the business and coordinating its internal organisation.

The Board currently comprises five members—three men and two women—all of whom have the technical and managerial expertise required to guide the company’s sustainable growth.

Board of Directors	
Marchesini Vainer	Chair of the Board of Directors
Marchesini Roberto	Chief Executive Officer
Casari Giorgia	Chief Executive Officer
Marchesini Marcello	Board Member



3.COMMON BENEFIT OBJECTIVES

Risaia del Duca's mission is to promote an innovative model for agricultural and livestock farming that brings together productivity, environmental stewardship, scientific research and education.

The company is committed to adopting sustainable practices and developing processes that enhance the value of agricultural and livestock by-products by recovering nutrients and generating energy from renewable sources. It also promotes experimental projects in collaboration with research institutions and universities, while offering training programmes designed to build new skills in the agricultural and livestock sectors.

In 2023, following its transition to Benefit Corporation status, Risaia del Duca amended its Articles of Association to formally incorporate its common benefit purposes.

This decision formally safeguards these commitments, ensuring they remain in place through any future changes to the company.

The common benefit purposes are organised into four priority areas:



1. Environment

Promoting environmental protection across all its dimensions—water, soil and air—through technologies and practices that strengthen the company's sustainability in line with circular economy principles.



2. Decarbonisation:

Transitioning the operating model towards climate neutrality by progressively reducing greenhouse gas emissions, in line with European and national ecological transition targets.



3. Animal Welfare

Ensuring optimal herd health and welfare through advanced, sustainable management practices that promote animal longevity, productivity and quality of life.



4. Community and Education:

Building an inclusive, ethical business model with strong local roots, supporting the growth of younger generations through educational, training and outreach activities.



4. ACTIONS and KPIs

ENVIRONMENT:

In 2025, Risaia del Duca's environmental initiatives remained centred on improving soil fertility, reducing the use of agricultural chemicals and limiting atmospheric emissions, in line with the sustainability objectives set at both company and European level.

One of the main measures was to keep at least 50% of the farmland under forage crops, primarily alfalfa, a nitrogen-fixing crop that naturally enriches the soil. Combined with targeted crop rotation and compliance with integrated production standards, this approach significantly reduced the use of plant protection products and herbicides, keeping application levels well below the regional average. This approach has also helped prevent the spread of pathogens and weeds.

Optimising sowing times through soil analysis and georeferencing tools continues to improve the efficiency of agronomic practices and crop management. At the same time, the use of livestock effluent treated with dynamic separators has significantly reduced reliance on chemical fertilisers compared with the average levels set out in the regional fertilisation plan.

Reducing Atmospheric Emissions

To limit ammonia nitrogen emissions, digestate continued to be applied through direct soil incorporation, an agronomic practice that minimises volatilisation losses. Part of the liquid digestate fraction, following microfiltration, was also applied through drip fertigation systems. This allows nutrients to be delivered precisely where needed, reducing the risk of dispersion.

Biodiversity Protection and Carbon Sequestration

As part of its efforts to enhance the environmental value of the landscape and address climate change, Risaia del Duca completed the agroforestry park designed in 2023, planting more than 200 native trees and shrubs. The initiative is intended to:

- Promote plant and wildlife biodiversity
- Improve the ecological quality of the local area
- Support CO₂ sequestration in line with the European Union's environmental objectives

2025 Action Review

Action	KPI/Notes	Progress
Nitrogen Fixing Cultivation of nitrogen-fixing forage crops on at least 50% of the farm's land	Area maintained under forage crops out of the farm's total 100 hectares	114% Target: 43 hectares Result: 49 hectares
Reduced Use of Plant Protection Products and Herbicides Implementation of regional guidelines to limit the use of chemical products	Reduction in the use of plant protection products and herbicides compared with the regional average. In Emilia-Romagna The regional average was 18.84 kg/ha, while Risaia del Duca used a total of 6.60 kg/ha.	134% Target: -70% Result: -78%
Soil Improvement Use of organic soil improvers produced on the farm	All livestock effluent, including slurry and manure, was processed in the biogas plant. Following separation, the resulting digestate was applied to the farm's land as an organic soil improver to enhance its organic matter content and chemical properties.	100% Target: 100% Result: 100%
Water Use Monitoring and Reduction in Livestock Operations Implementation of an electronic control system for the showers used in the livestock housing to support animal welfare	Reduction in water consumption compared with shower operation without water-use controls. Water consumption was 1,617 m ³ in 2023. Following the introduction of the new control system, it fell to 1,201 m ³ .	105% Target: -20% Result: -25%
Reducing Nitrogen Emissions Reduction of emissions during slurry application through direct soil incorporation.	The digestate fractions were incorporated directly into the soil as they were applied to the farm's land used for conventional crops.	100% Target: 100% Result: 100%
Enhancement of Biodiversity Planting of tree and shrub species.	The farm plans to develop a wooded area gradually to support carbon sequestration. Overall target: 60,000 m²	100% Target: 60,000 m ² Result: 8,000 m ²

Planned Actions for 2025

Nitrogen Fixing

At least 50% of the farm's available agricultural land will remain dedicated to forage production, with a focus on nitrogen-fixing legumes, especially alfalfa.

This approach supports soil fertility while reducing the need for chemical fertilisers.

Reduced Use of Plant Protection Products and Herbicides

The farm plans to maintain the reduction in chemical product use already achieved compared with the regional average, targeting a reduction of close to 70%.

This objective will be pursued through crop rotation and sustainable agronomic practices.

Improving Soil Quality

The farm will keep using livestock effluent and digestate treated through mechanical processes as organic soil improvers to enhance the soil's organic composition and chemical properties.

Research will also move forward on the use of natural substances, such as zeolite, that release nitrogen gradually into the soil and reduce reliance on synthetic fertilisers.

Reducing Nitrogen Emissions

The full volume of liquid organic soil improvers derived from the farm's livestock effluent and digestate will continue to be incorporated directly into the soil to limit volatilisation and reduce environmental impact. The research project aimed at reducing nitrogen and phosphorus loads in the liquid effluent used for fertigation will also move forward.

Protection of Biodiversity

The farm will expand its afforestation programme by planting a further 7,000 m², strengthening ecological connectivity and increasing CO₂ sequestration.

Water Consumption Efficiency

The automatic control system for the livestock cooling showers is being further optimised. Water savings reached 25% in 2025, with a target of 35% set for 2026.

In 2026, the rainwater collection pond serving the building roofs is scheduled to be removed, with runoff redirected directly into the irrigation channels.

DECARBONISATION:

The anaerobic digestion plant has reached stable operating conditions, generating approximately 300,000 kWh of electricity from biogas each year. This remains below its annual potential of 450,000 kWh due to challenges in managing the required organic feedstock and extraordinary maintenance work on the digester. This output is complemented by the 66 kWp photovoltaic system installed on the farm's roofs, which generated 53,187 kWh in 2025.

Following this increase in on-site energy generation, no further measures are planned for 2026.

All waste produced by the farm, including special waste from plant protection product and veterinary medicine containers, was correctly separated and disposed of in compliance with current regulations. Separate waste collection has been extended to all categories of farm waste, achieving a 100% recovery rate, apart from a minimal share of residual waste generated by office and domestic activities.

Livestock Effluent: From Waste to Resource

Livestock effluent management is a key element of the farm's decarbonisation strategy. Through the biogas plant, slurry and other organic by-products are converted into energy, while the liquid and solid fractions generated by the process are recovered for use as organic soil improvers. This circular approach supports:

- The return of organic matter to the soil;
- More concentrated and efficient use of nutrients;
- Replacing the conventional livestock bedding materials, such as sawdust or straw, with the treated solid fraction.

To establish a comparable emissions benchmark, the farm completed its carbon footprint assessment in 2025, measuring kilograms of CO₂ emitted against litres of milk produced. This makes it possible to compare the farm's performance with that of other producers within the Parmigiano Reggiano consortium. The carbon footprint of milk production at Risaia del Duca was calculated at 1.51 kg CO₂e/kg FPCM, below the average of 1.54 kg CO₂e recorded across 244 Parmigiano Reggiano dairy farms.

The largest source of impact was externally sourced feed, accounting for 0.69 kg CO₂e/kg FPCM, or 42% of the total. Enteric emissions ranked second at 0.58 kg CO₂e/kg FPCM, representing 36%, followed by energy use in livestock housing at 0.21 kg CO₂e/kg FPCM, or 13%.

Further reductions in the farm's carbon footprint will require greater on-farm forage production, lower reliance on externally purchased feed and improvements in feed quality. These measures are already included in the farm's operational plans.

2025 Action Review

Action	KPI	Progress
Electricity production from the Farm's Livestock Effluent - Maintaining the anaerobic digestion system to process all livestock effluent produced by the farm	Percentage of livestock effluent used for energy generation - 100% of the farm's livestock effluent has to be used to generate electricity.	100% Target: 100% Result: 100%
Water savings - Collection and use of rainwater from the farm's roof drainage system	Percentage of collected rainwater reused - The volume depends on annual rainfall, but all collected rainwater was reused on the fields.	100% Target: 100% Result: 100%
Elimination of mixed waste - Waste sorting and separate collection practices designed to minimise mixed waste	Percentage of waste separated for recycling - All waste is sorted through separate collection, apart from a small residual fraction that cannot be separated.	100% Target: 95% Result: 95%
Renewable energy production and carbon footprint reduction - Improving the operating efficiency of the biogas energy plant	Electricity production (Mwh/year) - Maintaining the anaerobic digester at its current efficiency level to achieve the estimated electricity output.	66% Target: 450,000 kWh Result: 299,045 kWh
Maintaining the efficiency of the installed photovoltaic system - A total capacity of 66 kWp has been installed	Electricity generated by the photovoltaic system (kWh)	76% Target: 70,000 kWh Result: 53,187 kWh

Planned Actions for 2026 – Summary

- *With electricity generation now exceeding the farm's own requirements, activities planned for 2026 will focus exclusively on improving the use of all livestock effluent in the biogas plant.*
- *Research will also continue into fertigation and satellite-based precision irrigation to reduce irrigation water consumption.*

ANIMAL WELFARE:

The barn is designed to provide the herd with optimal living conditions, including:

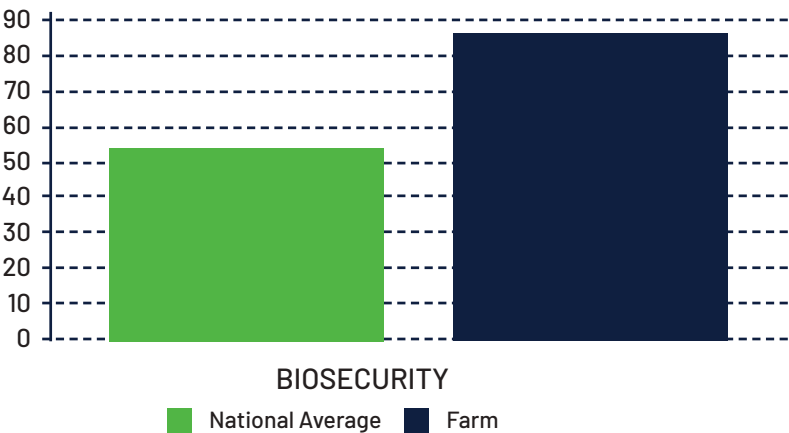
- More than one cubicle per animal,
- Free access to the feeding area and milking robot
- Separate resting areas to reduce competition-related stress

The calf-rearing area dedicated to welfare research was completed in 2024 and is equipped with individual hutches and video-monitored paddocks. As part of the industrial PhD project carried out in collaboration with the University of Bologna, several studies were conducted there to assess calf welfare.

In 2025, animal welfare was evaluated using the ClassyFarm methodology. The assessment found optimal results for 80% of the criteria examined, with none falling below acceptable levels.

Area	Farm Score (%)	National Average (%) (previous year)
Structure	89	70
Management	98	78
Risk degree	100	61
ABM	95	85
OVERALL WELFARE SCORE	95	79

The ClassyFarm assessment also showed that cattle biosecurity standards were high compared with the national average, confirming the positive results of the measures introduced.



These measures included:

- New animal welfare KPIs covering adult cattle mortality, calf mortality and lameness, supported by daily preventive checks
- Weekly footbaths and the purchase of equipment for hoof trimming every six months
- Checks to confirm appropriate feeding practices



Figure 2-4 Footbaths for Lameness Prevention



Figure 2-5 Detail of the Four-Hectare Area Planted with Nectar-Rich Species

Protecting Pollinating Insects

- In 2025, four hectares were once again dedicated to nectar-rich crops. This initiative is planned to continue for a further two years.

2025 Action Review

Action	KPI	Progress
Annual animal health assessment	Adult cattle mortality (Biosecurity and Animal Health Monitoring) Target: Adult Cattle: maximum 5% According to ClassyFarm parameters	100% Target: $\leq 5\%$ per month Result: $\leq 2\%$ per month
Annual animal health assessment	Calf Mortality (Biosecurity and Animal Health Monitoring) Ideal calf mortality rate: 3.4%, Average rate: 9–10% According to ClassyFarm parameters	100% Target: $\leq 5\%$ per month Result: $\leq 1\%$ per month
Daily animal health assessment	Number of lameness cases Commitment to animal welfare by limiting the number of lameness cases recorded each year to no more than 8 animals with hoof-related problems.	89% Target: maximum 8 cases per year Result: 12 cases/year
Protection of bees and other pollinators Habitat restoration to support the natural recovery of bees and other pollinating insects	Area planted with nectar-rich species Four hectares of fallow land were sown with flowering nectar-rich species. – Target: 4 hectares, equivalent to 4% of the available land, maintained for four years.	100% Target: 4 hectares Result: 4 hectares

Planned Actions for 2026

- *Daily monitoring of animal health, with mortality rates kept at or below the ideal level set by ClassyFarm;*
- *Maintaining fewer than eight lameness cases per year;*
- *Maintaining adequate space and animal welfare facilities;*
- *Maintaining the four hectares planted with nectar-rich species.*

COMMUNITY AND EDUCATION:

In 2025, the company maintained its strong commitment to training and knowledge sharing, achieving:

- “Zero” workplace accidents, supported by training on occupational safety, agricultural machinery, first aid and fire prevention.
- Training targets exceeded in terms of total hours delivered.

Research activities included:

- Ongoing projects with the Universities of Bologna and Ferrara to optimise livestock effluent use and support soil regeneration.
- Significant work was also carried out to exceed the planned number of internal training and outreach events, as well as educational visits for secondary-school and university students.

Date	Planned Activities	Coordinator	Description
20 February	Istituto Agrario “ITAS Calvi”, Finale Emilia (MO)	S.Negrello	Presentation of the RISAIA DEL DUCA project to two 5th-year classes at Istituto Agrario Calvi (50 students)
8 April	ITS Course	RURAL SET Agronomy Consultancy	Animal Welfare and Environmental Sustainability Lecturers: Lodi, Ragazzoni, Bocchi, Baronti (15 students)
12 April	Istituto Agrario “ITAS Calvi”, Finale Emilia (MO)	S.Negrello	Decision-support system for the wheat supply chain (60 students)
10 May	Delegation from the Hiroshima Municipal Administration (Japan)		Presentation of the Risaia del Duca project to a delegation from Hiroshima Prefecture (8 representatives)
14 May	PLF Unibo	University of Bologna	Presentation of Risaia del Duca project (50 students)
24 May	Children at the Farm	WAMGROUP®	Presentation of Risaia del Duca project (100 guests)
21 November	Bocchialini Agricultural Institute, Parma	Sonia Dieci	Visit to Risaia del Duca by 4th-year students from the Agricultural Institute of Parma (40 students)

- Main events: 7
- Participants: about 350

- The number of workshops and outreach seminars held exceeded the minimum target.



Date	Planned Activities	Coordinator	Description
11 February	UNIBO – Internship Training	DISTAL Internship Office Bologna	Presentation of RISAIA DEL DUCA and its internship opportunities
10 October	PLF Università Cattolica del Sacro Cuore, Piacenza	Erminio Trevisi	Presentation of RISAIA DEL DUCA project
24 October	SOIL AND LIVESTOCK FARMING Conference University of Perugia	Claudio Marzadori	Presentation of RISAIA DEL DUCA project
29 October	INFORMATORE ZOOTECNICO Event ZOOTECNICO	Tassoni Anna Ricci	Webinar presenting the project RISAIA DEL DUCA and its areas of activity.
7 November	ECOMONDO Conference	Tassoni – CIB	Presentation of RISAIA DEL DUCA and the agronomic trials

Giuseppe Tassoni
SAVECO - Wamgroup
Alessandro Ragazzoni
UNIBO – Dipartimento di Scienze e Tecnologie Agro-alimentari

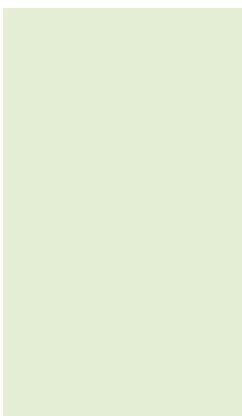


CONNESSIONI NATURALI.

Coltiviamo contatti, raccogliamo progetti.



**La valorizzazione del digestato nelle colture
cerealicole: il caso RISAIA del DUCA**



**WEBINAR
Informatore zootecnico
29 ottobre 2025**

**WEBINAR
COLTIVIAMO INNOVAZIONE
ALLEVIAMO FUTURO**

**29 OTTOBRE 2025
ORE 15:00-16:30**

ECONOMIA CIRCOLARE E SOSTENIBILITÀ, IN ZOOTECCIA, NON SONO PIÙ CONCETTI ASTRATTI. LO DIMOSTRA L'ESPERIENZA DELL'AZIENDA MODENESE RISAIA DEL DUCA.

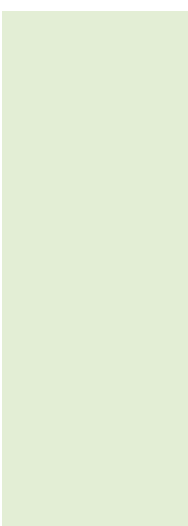
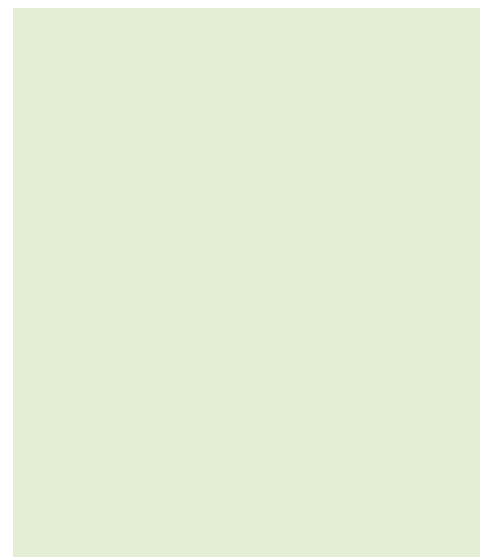
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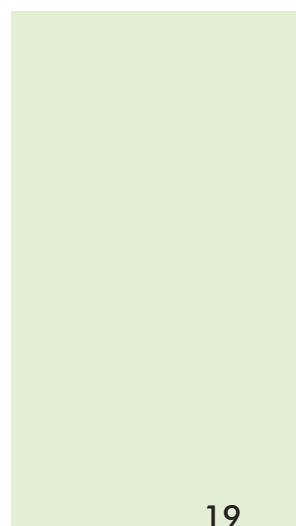


4th PLF STUDENT'S TRAVEL WORKSHOP

9th – 11th October 2025

Campus Santa Monica
Università Cattolica del Sacro Cuore
Via Bissolati, 74 – Cremona

12.15 – 12.30	I paradigmi dell'economia circolare in zootecnia: il caso RISAIA DEL DUCA	A. Ragazzoni, V. Bocchi Università di Bologna
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La convenienza ECONOMICA per un impianto di separazione del digestato

di Alessandro Regazzini

Il principale obiettivo della presente analisi è la valutazione economico-finanziaria dell'investimento in un impianto di separazione del digestato, al fine di verificare se i benefici economici e ambientali superino i costi di investimento e gestione.

La attività sperimentale sono state condotte nel 2024 presso l'azienda agricola Rosta del Duca, società familiare localizzata nel comune di San Felice sul Panaro, in provincia di Modena. L'azienda ha una produzione prevalentemente ortofrutticola e foraggiera ed è, pertanto, ideale per la ricerca condotta.

Tra le principali attività di coltivazione in fattoria vi sono: orticoltura, allevamento, semi foraggieri. L'installazione di tecniche agronomiche a basso impatto di

L'analisi economica di un impianto di separazione del digestato dimostra che, all'aumentare dei volumi trattati e in base alla portata, i costi unitari diminuiscono, con un bilancio positivo dell'installazione, anche solo con il risparmio della logistica di trasporto sui gommoli.

risparmio. E, infatti, durante l'andamento della ricerca, si è osservato che, all'aumentare del volume di digestato trattato, i costi unitari diminuiscono, con un bilancio positivo dell'installazione, anche solo con il risparmio della logistica di trasporto sui gommoli.

tecniche agronomiche innovative, in collaborazione con la Università di Bologna, Ferrara, Modena e Reggio Emilia, valutando la convenienza economica ed ambientale.

AMMENDANTI ORGANICI
L'installazione del sistema di separazione del digestato, oltre a ridurre i costi di gestione, produce un effetto positivo sul suolo, grazie all'apporto di nutrienti e alla riduzione della logistica di

che le stesse può modificare anche sensibilmente la relazione alla esigenza dell'allevamento/coltivazione biologica delle aree trattate.

È importante poi ricordare che la parte dell'impianto non hanno una vita tecnica superiore a 10 anni, per cui, si è considerato un tempo totale di funzionamento del processo completo di trattamento di 20 anni e, pertanto, si sono stimati i costi di sostituzione delle parti specifiche e delle relative manutenzioni. La valutazione complessiva dell'investimento ammonta a circa 73.000 euro (tabella 1).

IL CONTO ECONOMICO

Si ipotizza che l'investimento venga a un finanziamento pari al 75% del valore complessivo e con un tasso di interesse del 5% annuo. Tale ipotesi premessa di definire le quote di ammortamento e i relativi interessi passivi. Per quanto riguarda il conto economico annuale di gestione il valore complessivo si aggira intorno a 19.850 euro, che deve essere valutato come elemento di riferimento per il calcolo di un conto medio per unità di digestato trattato (tabella 2).

La valutazione è importante per definire i seguenti tempi di funzionamento e, conseguentemente, di ritorno dell'investimento.

• efficienza di impiego: 20 m³/ha;

• tempo di funzionamento giornaliero: 3 ore;

CALCOLO DEI COSTI FINANZIARI DELL'INVESTIMENTO	
Capitale richiesto (€)	55.000,00
Capitale proprio (€) (25%)	13.750,00
Capitale richiesto (€) (75%)	41.250,00
Tasso di interesse del capitale richiesto (%)	5%
Rata annuale (ammortamento capitale richiesto) (€)	3.000,00
Quota interessi (€)	2.062,50
Quota capitale (€)	937,50
Ammortamento capitale richiesto (€)	1.062,50

• gestione di lavoro annuale: 250;
• quantità di prodotto trattato: 15.000 m³ in un anno.
A integrazione del calcolo del costo di gestione annuale, in tabella 3 si riportano i risultati ottenuti per la stima della quota di ammortamento del capitale investito (paragone ad esempio con i costi di gestione delle attività agricole e dei relativi interessi sulla quota di finanziamento richiesta).

CONVENIENZA

È importante ricordare che per la valutazione della convenienza si è adottato un duplice approccio al fine di porre in evidenza sia gli eventuali maggiori costi di gestione degli impianti agricoli nel caso di separazione del digestato che di trattamento di filatura via i



Impianto Separator agricolo e industriale

L'INFORMATORE AGRARIO

Obiettivo dell'analisi
«costo unitario per m³»



Analisi DEI COSTI DI ADEGUAMENTO alla direttiva nitrati

di Alessandro Regazzini

In agricoltura si riferiscono a tutti i costi che si riferiscono al settore agricolo. In agricoltura si riferiscono a tutti i costi che si riferiscono al settore agricolo. In agricoltura si riferiscono a tutti i costi che si riferiscono al settore agricolo.

Una delle sfide più importanti per il settore agricolo è il contenimento dell'uso e dell'impiego delle risorse naturali, obiettivi che devono perseguitare le aziende agricole che vogliono essere sostenibili e redditizie.

La prima legge, il vincolo per la gestione degli effluenti zootecnici è uno dei fattori che influisce sulla redditività delle aziende agricole.

GESTIONE DELLA VITELLINA IN DIVERSI PAESI EUROPEI

Come possiamo migliorare la gestione del vitello in Italia?

di Valerio Basso, Angelo Costa e Barbara Pizzolli

L'obiettivo è di migliorare la gestione del vitello in Italia, attraverso la comparazione con i dati dei paesi europei.

In questo articolo viene analizzato uno studio comparato che ha valutato la possibilità di migliorare la gestione del vitello in Italia.



Un vitello in un allevamento di vitelli in Italia.

In questi ultimi anni la cura e la gestione del vitello sono state oggetto di molte discussioni e ricerche. In Italia, la gestione del vitello è ancora molto tradizionale e basata su esperienze locali.

La gestione del vitello è un processo complesso che coinvolge molti fattori, tra cui la nutrizione, la salute, il benessere e la gestione del parto.

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Risaia del Duca's social commitment was also reflected in its charitable giving. For the second consecutive year, donations supported the "Food for Soul" project, which provides meals to people in need. This year's donation amounted to €1,500.



Food for Soul

2025 Action Review

(See the appendix for details of the publications and events.)

Action	KPI	Progress
Ongoing staff training and zero-accident policy The company is committed to providing continuous staff training, giving employees the knowledge and tools needed to prevent workplace accidents.	Number of training hours Mandatory general and role-specific training requirements exceeded Number of accidents per year Accidents in 2025: 1	200% Target: 40 hours/year Result: 151 hours/year
Publication and dissemination of key findings from applied research conducted at the farm The initiative includes organising seminars and workshops at the farm.	Number of seminars per year. Breakdown: > 2	350% Target: 2 Result: 7
Publication and dissemination of key findings from applied research conducted at the farm The initiative includes organising events to raise awareness of the company's project.	Number of Participants per year	175% Target: 200 Result: 350
Publication and dissemination of key findings from applied research conducted at the farm The initiative includes publishing the farm's key findings in specialist journals.	Number of scientific articles published Breakdown: At least two publications annually	200% Target: 2 Result: 4
Publication and dissemination of key findings from applied research conducted at the farm The initiative includes establishing research agreements.	Number of university research projects universitaria Research with the Universities of Bologna and Ferrara on nitrogen capture using geological materials. Analysis and monitoring of soil fertility levels.	100% Target: 2 Result: 2

Action	KPI	Progress
Publication and dissemination of key findings from applied research conducted at the farm The initiative includes entering into agreements for industrial PhD programmes.	Launch of a university-based industrial PhD programme in collaboration with partner companies. Research focus: Assessment of calf welfare in the calf-rearing unit.	100% Target: 1 Result: 1
Publication and dissemination of key findings from applied research conducted at the farm The initiative includes formalising agreements to host students for internships and work placements.	No. of students Offering curricular internships and work placements to multiple students: At least two students hosted each year through different types of placement programmes.	200% Target: 2 Result: 4
Publication and dissemination of key findings from applied research conducted at the farm Presentation of the Risaia del Duca project at external events:	• UNIBO Internships • Istituto Calvi • PLF Piacenza • UNIPG Round Table • Ecomondo, Rimini	166% Target: 3 Result: 5
Charitable Donations Each year, the company donates up to 3% of sales revenue (Item A1 of the Financial Statements), subject to a maximum of €3,000, to charitable initiatives and projects supporting the local community.	Donation (€): Charitable contribution to the Food for Soul Foundation in support of Bottura's community refectory.	50% Target: €3,000 Result: €1,500

Planned Actions for 2026:

- Maintaining training hours above mandatory requirements.
- Achieving the zero-accident target.
- Organising at least 5 internal outreach events and presenting the project at a minimum of 3 external events.
- Publishing at least 4 articles in specialist journals.
- Continuing the agreements with the University of Bologna.
- Increasing student participation and completing the dedicated accommodation facilities.

Supporting local charities through financial donations.

Continuing the company's charitable giving by selecting projects aligned with its sustainability objectives.

5. IMPACT MEASUREMENT

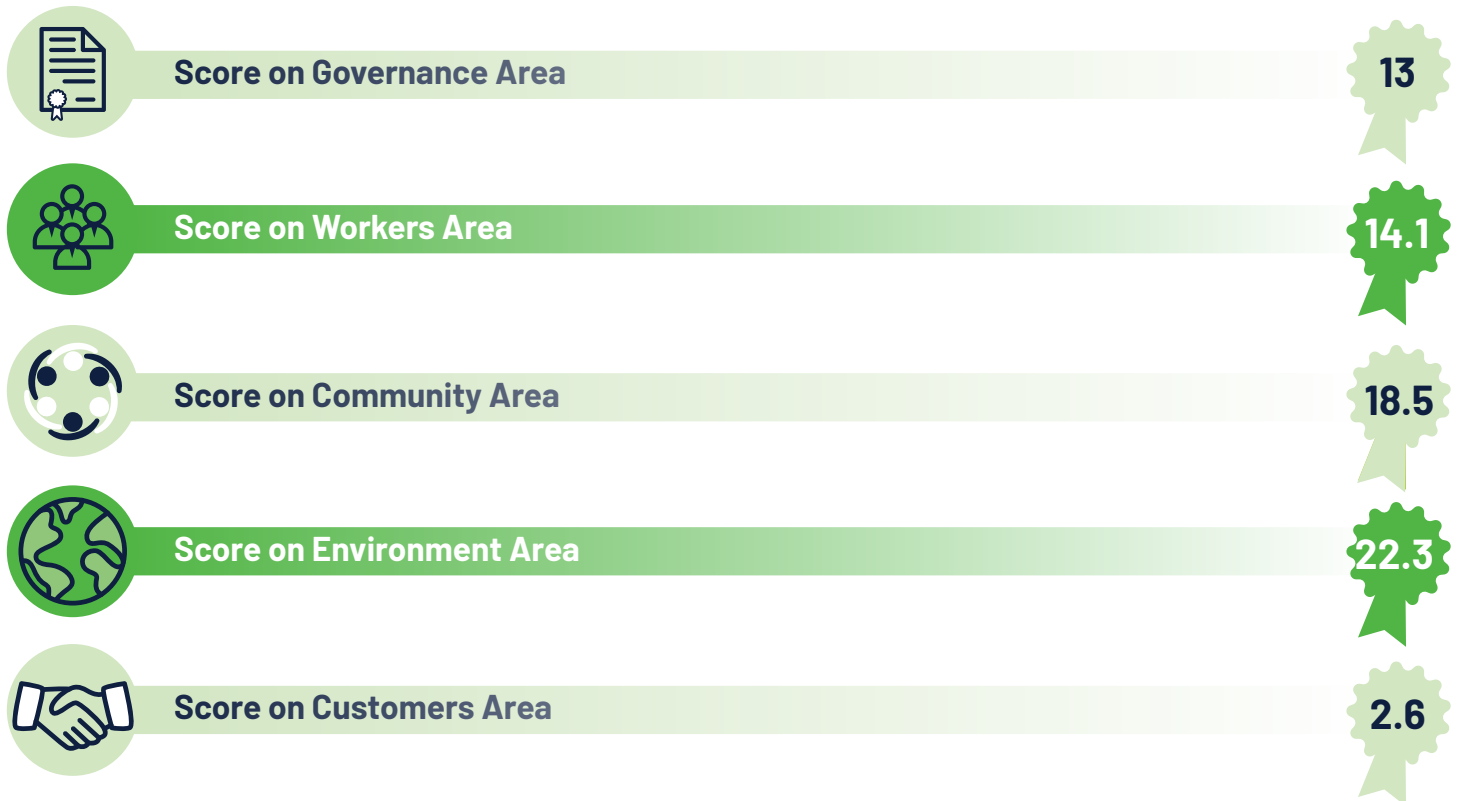
Impact was measured in 2024 using the B Impact Assessment (BIA) questionnaire. As there were no significant changes, and following the recent revision of the assessment methodology, the evaluation was not repeated. The assessment highlighted the following strengths:

- Clarity of mission,
- High ethical standards and transparency,
- Community engagement,
- Commitment to environmental protection and diversity.

In 2026, the company began an assessment process and introduced a number of corrective measures in preparation for ISO 14001 environmental certification, providing formal evidence of its commitment to environmental protection.

Score achieved using the impact measurement tool (e.g. BIA Score)

70.7



6. IN CONCLUSION

In its third year as a Benefit Corporation, Risaia del Duca has reaffirmed its commitment to generating positive impact in line with its common benefit purposes.

External assessments of animal welfare and the farm's carbon footprint provide independent confirmation of both the commitment made and the results achieved.

The research now under way, together with the results already emerging, is expected to support a further reduction in the use of chemical fertilisers.







www.risaiadelduca.com

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