

Rainwater Collection and Treatment for Drinking and Washing Water in Farming

Authors: A. KLEIBER, J-L. FOUSSE



An innovative rainwater treatment system for sustainable farming

As part of improving water saving and management, the practice of collecting and treating rainwater for washing and drinking, titled 'EkorainUltra®,' presents an innovative and sustainable solution for poultry farmers. This approach aims to reduce dependence on traditional water resources, while optimising operational costs. By integrating this technology,

farmers can not only contribute to environmental preservation by reducing their ecological footprint but also ensure more efficient and responsible water management within their farms. This factsheet outlines the benefits, implementation methods, and expected outcomes of adopting EkorainUltra®.

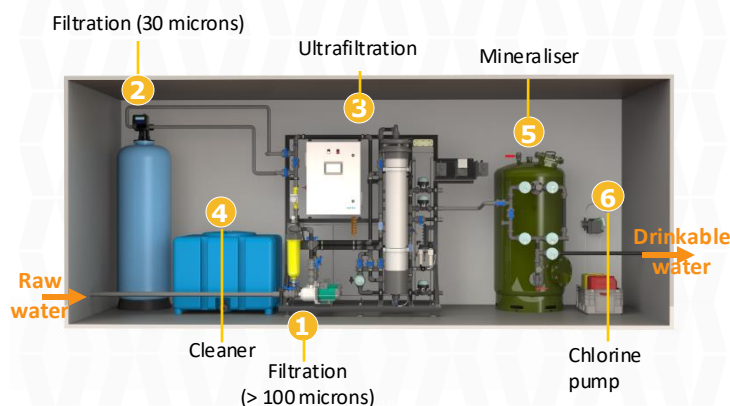


Figure 1: Schematic view of the Ocene Ekorain system: ready to plug in and operate, the Ekorain container takes care of all the stages involved in making rainwater drinkable.

Principle of Ekorain Ultra®

Ekorain Ultra®, developed by OCENE, is a solution for collecting and treating rainwater, intended for animal drinking and washing of housing in poultry and pig farms. The collected rainwater is prefiltered, stored, and then treated by ultrafiltration to remove suspended matter, viruses, and bacteria (Fig. 1). Chemical disinfection through chlorination is added for double safety. The rainwater is then mixed with supplementary water from wells, boreholes, or the public network; and distributed to the farm. Remineralisation is also possible. The storage capacity is calculated based on the collectible roof area and local rainfall data over ten years, allowing for rainwater self-sufficiency of typically between 30% and 80%. Ekorain Ultra® is available in two versions: either installed in a frost-free room close to the main rainwater storage or as a 'plug-and-play' version, including the container for the treatment equipment



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Investment costs and profitability

The Ekorain® range offers solutions for farms with both low (Ekorain POA®) and high (Ekorain Ultra®) water consumption:

- Ekorain POA® suits farm with at least 2,500 m² of roof area or 2,000 m³ of rainwater to treat. The investment ranges from €30,000 to €40,000, covering rainwater storage, plug-and-play treatment, civil engineering works, and distribution. Operating costs are €0.30-0.50/m³ (maintenance and consumables).
- Ekorain Ultra® targets larger farms with 4,500 m² of roof area or 4,000 m³ of rainwater. The investment ranges from €80,000 to €100,000, with the same inclusions. Operating costs are €0.90-1/m³.

Subsidies of up to 40% may be available depending on the region. With public water costing €2.50/ m³ (2024), return on investment is typically achieved in 5 to 8 years.



Figure 2: Illustration of the EkorainUltra® rainwater collection concept for livestock farming

Benefits and points of attention

- Reduces reliance on public water networks and boreholes, boosting resilience during water shortages.
- Cuts water costs, which are expected to rise, and eases pressure on public water systems in dry periods.
- Barn layout and site topography are crucial for project feasibility.
- Rainwater from asbestos roofs cannot be used for animal watering.
- Field testing is underway, with user trials planned for late 2025. Commercialisation is in progress.

Cost-benefits analysis

The impact of the investment in the rainwater collection and treatment system, in two variants (with and without subsidies), on the Gross Margin (GM) (the difference between Sales Value and Variable Costs of Production) level was determined.

The implementation of EKORAINULTRA® results in a decline in GM across all farm sizes due to a necessary investment. In the subsidised scenario, the Gross Margin decreases range from -0.8% for large farms to -3.8% for small farms.

Assumptions	System of production						
	Conventional				Organic	Free-range	Slow growing
	Small	Medium	Large	Very large			
Subsidies	-3,8%	-1,1%	-0,8%	-1,4%	-1,3%	-2,0%	-2,1%
No subsidies	-7,1%	-2,5%	-2,0%	-3,0%	-2,4%	-3,5%	-3,9%

Without subsidies, the financial impact of the investment is more noticeable, while the Gross Margin decreases, ranging from -2.0% to -7.1%. Despite the system's environmental advantages, the investment negatively affects financial outcomes, especially for smaller farms. Larger farms, however, benefit from economies of scale, which help reduce the severity of the Gross Margin decline.



Find out more about EkorainUltra® in the brochure available via the QR code or here: <https://www.ocene.fr/metiers/traitements-de-l-eau/ekorain/112-ekorain-la-solution-de-traitements-de-l-eau-de-pluie-pour-l-abreuvement-des-animaux.html>

Video presentation of the system: <https://youtu.be/yziNeJEd9jk>

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