Instituto Nacional de Investigação Agrária e Veterinária, I.P.

GOEfluentes

Livestock effluents: Farm scale effluent management towards agronomic and energetic valorization

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Annual Meeting *EAAP 2018*
Dubrovnik, 30 August 2018

GOVERNO DE PORTUGAL | MINISTÉRIO DA AGRICULTURA, FLORESTAS E DESENVOLVIMENTO RURAL
PORTUGAL 2020
UNIÃO EUROPEIA Fundo Europeu Agrícola de Desenvolvimento Rural
PDR 2020 PROGRAMA DE DESENVOLVIMENTO RURAL 2014·2020

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PROGRAMA DE DESENVOLVIMENTO RURAL 2014·2020

Measure 1. Promotion Innovation

Action 1.1. Inovation by Operational Groups

Domain 1. Increase of resources efficiency in agriculture and forestry production

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Practical Problem:

- Livestock production is concentrated in certain regions, some without enough area for land spreading valorisation of effluents.

- Therefore, in order to be competitive and comply with legal requirements, the sector should promote a circular economy, pursuing new alternatives for effluents management.

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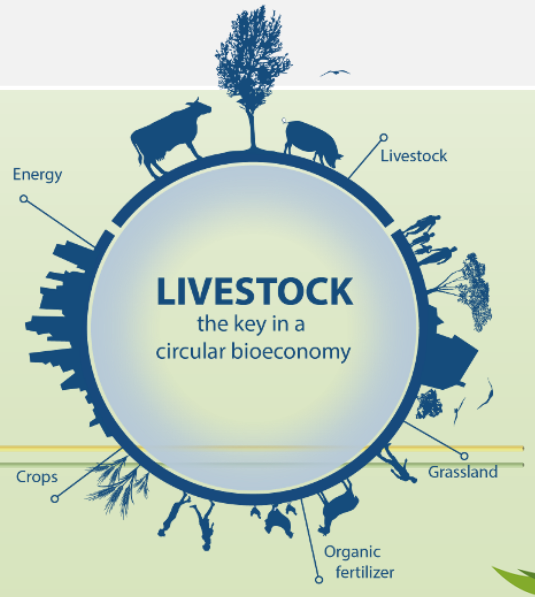
Objectives:

- Valorise livestock effluents as a resource, focusing on the production and integrated management of the different flows generated;
- Optimize effluents use as secondary raw materials, recovering energy and nutrients, improving farm nutrient balances and promoting sustainable management.

- CIRCULAR ECONOMY
- ZERO WASTE



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PARTNERSHIP

- 4 Research/Teaching
- 3 Agri Associations
- 6 Agri Enterprises

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ACTION PLAN

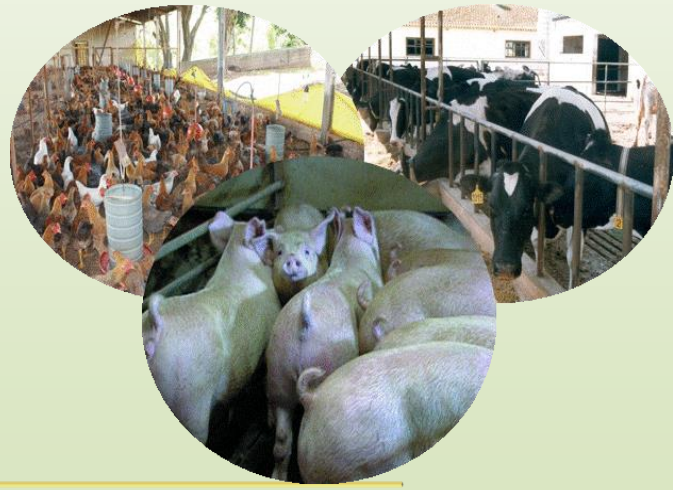
Action1. Characterization of intensive livestock systems

- State of the art
- **Surveys**

Action 2. Mitigation measures for gaseous emissions and primary livestock effluent treatment

Action 3. Valorisation of livestock effluents as a resource

- Composting of dairy cattle manure
- **Anaerobic digestion of livestock effluents**
- Biodegradation of livestock effluents by BSF larvae
- Agronomic valorisation
- **Bio energy production**



Action 4. Socioeconomic impact studies

Action 5. Demonstration and Dissemination

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Task 1.2

Surveys

- ✓Identification and general information about the farm
- ✓Energy and water use
- ✓Feeding and drinking conditions
- ✓Edification conditions
- ✓Effluent management indoors
- ✓Effluent management outdoors
- ✓Final destination of the effluents

- ✓Portuguese Environment Agency
- ✓Planning Office of the Ministry of Agriculture
- ✓Partners

Livestock Systems

- Dairy cattle
- Pigs
- Poultry

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Task 3.2/3.5

✓ Selection of the demo farm (for AD mobile unit deployment)

Closed cycle farm with 900 sows and 5.000 finishing places

Gestating sows

Farrowing sows

Weaners

Growing/finishing pigs

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Task 3.2/3.5

Slurry from all stages

Slurry management practices

Equalization tank

Solid/liquid separation

Liquid phase

Storage in Lagoons

Solid phase

Soil amendment

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Task 3.2/3.5

- ✓ Characterization of the pig farm (type and performance)
- ✓ Slurry collection and characterization

Different production phases

↓

Slurry with different volatile solids content

↓

Different energy potential

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Task 3.2/3.5

Growing/finishing pigs

Total solids = 50-80 g/L
TVS/TS = 75-85

Ongoing

Lab-scale AD trials

Future

Deployment of the AD mobile unit on farm for growing/finishing phase

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FINAL REMARKS

- **Expected results**
  - ✓A roadmap for effluents management, including technology portfolio, linked to farm characteristics and regional constraints;
  - ✓Support decision making on centralized/decentralized solutions;
  - ✓Contribute to sustainable livestock intensification and landscape planning, to face climate change and resources scarcity.

- **Results so far/first lesson**

  Recognition of the need for:
  - ✓Integration of livestock production data at local/regional/national scale;
  - ✓Landscape planning for livestock production towards environmental sustainability, sector competitiveness and rural development.

- **Who will benefit?**
  - ✓The beneficiaries will be the animal producers and farmers, its sustainability and the image and brand of the sector.

THANK YOU FOR YOUR ATTENTION

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