

PORC-CAMB – Innovative Solutions for reducing environmental pollution to improve animal welfare on pig farms

Summary

High concentrations of ammonia in the air can cause skin, eye, throat and lung problems in both animals and humans. In extreme cases it can cause blindness, lung damage and even death. On pig farms, where slurry accumulates under the slats with a high concentration of ammonium, diffusion of ammonia in the air is very high and, despite adequate ventilation, it has a severe impact on the welfare of the pigs. The implementation of on-farm slat treatments such as adding acid or adsorbent materials (e.g. zeolites) can reduce or even mitigate ammonia emissions in pigsties. Furthermore, such a reduction in on-farm emissions could have an impact not only on animal welfare, but also on the productivity and quality of the final product.

Objectives

The main objective of this project is to improve the welfare of livestock on pig farms by mitigating ammonia emissions.

Description of the actions carried out in the project

- 1) Survey of the current situation and comparison with current animal welfare standards.
- 2) Study of ammonia emissions mitigation using the established treatment (addition of acid and addition of zeolites under the farm slats).
- 3) Monitoring animal welfare parameters comparing both types of established treatment.
- 4) Productivity and statistical study of the established treatments.

Final results and practical recommendations

Two methodologies for ammonia reduction and farms were evaluated in this project: acidification of the slurry in the slats and the addition of zeolite to the slurry. The treatments showed occasional ammonia reduction percentages in the farm buildings but no continuous reduction pattern was observed during each of the fattening cycles in the treatment buildings. The positive effect of this treatment might be masked when the buildings are well ventilated, thus impeding the detection of gas concentration in the buildings.

Conclusions

The types of building, their geographical location and the frequency at which the pits are emptied, depending on their size, all play a significant role in emissions, regardless of the treatments applied in each building.

Continuous measurement of emissions in the buildings, the weight of each animal entering and leaving and the acid dosage in a system that allows it to be mixed with the slurry, may be considered possible improvements to the experimental system assessed in this study.

Leader of the Operational Group

ORGANISATION: Girona Pig Sanitation Group (GSP)

Coordinator of the Operational Group

ORGANISATION: CATALAN MEAT AND ALTERNATIVE PROTEIN CLUSTER (INNOVACC)

Other members of the Operational Group (grant recipients)

ORGANISATION: Vilram, SLU

ORGANISATION: Explotacions Artigas, SLU

Other members of the Operational Group (not recipients of the grant)

ORGANISATION: EMA Depuració i Enginyeria de l'aigua, SL; Balmes University Foundation

Geographical area(s) of application

PROVINCE(S)	REGION(S)
BARCELONA GIRONA	Baix Empordà ALT EMPORDÀ GARROTXA GIRONÈS PLA DE L'ESTANY OSONA

Dissemination of the project (publications, conferences, multimedia, etc.)Publications in the INNOVACC newsletter:

- INNOVACC November 2019 Newsletter, where a news item on the grant application was published.
- Presentation of the project to the Ordinary General Assembly of INNOVACC, on 15 June 2020.
- INNOVACC June 2020 Newsletter, where a news item on approval of the project was published.
- INNOVACC August 2021 newsletter, where the news item "Us mostrem els casos d'èxit publicats a la revista anual d'INNOVACC publicada el juny-2021" (Success stories published in the June-2021 INNOVACC annual magazine) about this and other projects was published.

Presentations at the INNOVACC Assemblies:

- Presentation of the project to the Extraordinary General Assembly of INNOVACC, on 21 December 2020.
- Presentation of the project to the Ordinary General Assembly of INNOVACC, on 21 June 2021.
- Presentation of the project to the Extraordinary General Assembly of INNOVACC, on 21 December 2021.
- Presentation of the project to the Ordinary General Assembly of INNOVACC, on 20 June 2022.

Links to posts on the INNOVACC website:

<https://www.innovacc.cat/2019/11/21/projectes-presentats-en-la-linia-de-grups-operatius-2019-del-darp/>

<https://www.innovacc.cat/2020/06/29/6-projectes-presentats-en-la-linia-de-grups-operatius-2019-del-darp-obtenen-resolucio-favorable/>

<https://www.innovacc.cat/2020/09/30/grups-operatius-2019-projecte-porc-camb-solucions-innovadores-de-reduccio-de-contaminacio-ambiental-per-a-millorar-el-benestar-animal-en-granges-de-porci/>

Links to participants' publications:

<http://www.gspgirona.org/noticia.php?id=51>

<https://betatechcenter.com/ca/projectes/porc-camb/>

<https://www.artigasalimentaria.com/certificacions/>

INNOVACC Magazine:

https://www.innovacc.cat/wp-content/uploads/2021/06/disseny-revista-innovacc-2021_ok.pdf (page 26)

https://www.innovacc.cat/wp-content/uploads/2022/07/disseny-revista-innovacc-2022_BR.pdf (page 17)

Conferences organised by INNOVACC:

Presentation of the project at an online conference for livestock farmers (28 September 2022) organised by INNOVACC

Project website

<https://www.innovacc.cat/2020/09/30/grups-operatius-2019-projecte-porc-camb-solucions-innovadores-de-reduccio-de-contaminacio-ambiental-per-a-millorar-el-benestar-animal-en-granges-de-porci/>

More information on the project

PROJECT DATES	TOTAL BUDGET
Start date (month-year): July 2020	Total budget: €205,863.66
Completion date (month-year): September 2022	DACC funding: €84,132.21
Current status: Completed	EU funding: €63,468.15
	Own funding: €58,263.30

With funding from:

Project funded through Operation 16.01.01 (Cooperation for Innovation) through the Catalan Rural Development Programme 2014-2022.

Order ARP/133/2017 of 21 June, approving the regulatory bases for grants for cooperation for innovation by promoting the creation of European Association for Innovation operational groups in the areas of agricultural productivity and sustainability and the execution of innovative pilot projects by those groups, and Resolution ARP/1531/2019, of 28 May, announcing the call for the grant.

