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## OWC 2020 Paper Submission - Science Forum

*Topic 4 - Innovation in Organic farming: "thinking out of the Box"*

OWC2020-SCI-1348

### WHAT ALTERNATIVE TO THE USE OF CONVENTIONAL STRAW IN ORGANIC FARMING SYSTEM?

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**Abstract:** Under organic farming, livestock systems are allowed to use straw from conventional farming system. However, there are still some questions about the risk of element transfer when straw are used for the animal bedding and the consequences on soil quality when manure is applied. Moreover, private marketers could refuse, in the future, products (e.g. milk) from organic farms using conventional straw. In this context, a crucial question is "What alternative to the use of conventional straw in organic farming system?" This question, assessed by a farmer association (Agrobio35), was studied by a group of students. A bibliographic review was done of i) the existing alternatives of conventional straw in organic farming, ii) the feasibility (technic, economic, implementation) of these alternative by the farmers. This review was completed by a survey of height farmers to collect their feedbacks about the relevance of the alternatives tools they apply (wooden chips, sand, wheat flour). The survey results were used to build a leaflet dedicated for advisors and farmers looking for alternatives.

**Introduction:** Regarding the European specifications of organic farming, within all the requests, livestock systems (dairy system, suckling cows) have to assure animal welfare by providing an outside access and a good bedding. However, the organic straw production for the bedding is not always sufficient to cover all the demands from organic farmers. Indeed, up to 7 to 9 DM kg per day and per cows are needed for a straw bedding or cubicle with straw systems (Gervais et al., 2018). Therefore, the purchase and use of straw from conventional production are accepted. If these practices are currently applied, there are still some questions about the risk of element transfer (e.g. pesticides, straw shortcuts) when straw are used for the animal bedding and the consequences on soil quality when manure is applied. Hence, using conventional straw can be a threat to those systems, private industries or private marketers could refuse, in the future, products (e.g. milk) from organic farms using conventional straw.

In this context, a crucial question is "What alternative to the use of conventional straw in organic farming system?". In order to supply advices to farmers, a farmer association (Agrobio35) investigates this question and a group of four students from the institute of Agronomy (AGROCAMPUS OUEST-Rennes) managed the project.

**Material and methods:** The students had to provide a bibliographic review of i) the existing alternatives of conventional straw in organic farming, ii) the feasibility (technic, economic, implementation) of these alternative by the farmers. Afterwards, students had to design and provide a questionnaire in order to perform a qualitative survey on farmers from Ille et Vilaine department (Britany, France). The aim of this survey was to collect farmer's feedbacks about the advantages and disadvantages of the alternative tools they apply in order to assess their feasibility features. The questionnaire was made of 6 parts : i) farm and farmers' characteristics (trajectories, motivations,...) ii) practice's change for bedding; iii) technical and practical features of the new practice; iv) agronomical consequences; v) improvement prospects; vi) supplementary information. The survey results were analysed in order to build a map of the different alternative practices to conventional straw with their feasibility according the situation.

**Results:** height dairy farmers were surveyed (all with an organic production, except one) with, on average, 73 dairy cows (28-180). Five farms are characterized by a straw bedding (2 conventional straw, 1 organic straw, 1 conventional straw mixed with wooden chips, 1 with wooden chips and compost residue). Three farms used a bedding system with cubicles (2 concrete cubicles with calcareous sand or dolomite sand; 1 cubicle with a mattress with wheat flour)

The different deliverables, such as bibliographic work, the questionnaire and the feedbacks from the farmer surveys, were presented by different axis: i) the diversity of alternatives to the conventional straw found, ii) the relevance and feasibility of these alternatives to the conventional straw regarding technic, economic and implementation points of views such as labour requirements, absorption capacity of the matter, the quantity and the frequency required to supply a sufficient bedding and an estimated cost. A decisional tree according to the farming system situation was elaborated to help to choose an alternative practice.

**Discussion:** The feedbacks from the farmer surveys were discussed in terms of i) the diversity of alternatives to the conventional straw, ii) the relevance and feasibility of these alternatives to the conventional straw regarding technic, economic and implementation points of view. A technical leaflet was designed dedicated for an advisory purpose. More surveys to explore other alternative practices such as corncob, corn stover or miscanthus strand should be performed in order to complete the database and information for the leaflet.

**Disclosure of Interest:** None Declared

**Keywords:** alternative to conventional straw, economic feasibility, Farmer Survey, implementation feasibility, student work, technic feasibility

#### References

Gervais et al., 2018 : Des vaches laitières en bonne santé. Idele, Institut de l'élevage. collection Synthèse, 88p