The Knomana knowledge base - A tool to promote exchange of knowledge and identify local plants for adressing sanitary problems in EOA

Pierre Martin, Priscilla Keip, Alain Gutierrez, Marianne Huchard, Zakara Ilboudo, Samira Sarter, Appolinaire Tagne, Pierre Silvie

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Pierre Martin[1,2], Priscilla Keip[1,2], Alain Gutierrez[3], Marianne Huchard[3], Zakara Ilboudo[4], Samira Sarter[5,6], Appolinaire Tagne[7], Pierre Silvie[1,2,8]

[1] CIRAD, UPR AIDA, F-34398 Montpellier, France

[2] AIDA, Univ Montpellier, CIRAD, Montpellier, France

[3] LIRMM, Université de Montpellier, CNRS, Montpellier, France

[4] Université Professeur Joseph Ki-Zerbo, UFR-SVT, Ouagadougou, Burkina Faso.

[5] CIRAD, UMR ISEM, F-34398 Montpellier, France.

[6] ISEM, Univ Montpellier, CNRS, EPHE, IRD, Montpellier, France.

[7] IRAD, Yaoundé, Cameroun

[8] IRD, UMR IPME, 34AA001, Montpellier, France

Corresponding author: Pierre Martin, Cirad, Avenue Agropolis, 34032 Montpellier, pierre.martin@cirad.fr, +33467614981

In Ecological Organic Agriculture (EOA), growers and breeders need alternatives to chemical pesticides or antibiotics to protect their crops in the field or during grain storage, their livestock or to protect fishes, for better health management. Landscape and habitat management, trap crops, push pull system or other ecological infrastructures that maintain or reinforce natural regulation, or repel the crop pests, are alternatives tricky to implement. The usual alternatives in Africa, inherited from indigenous knowledge, are based on the use of local resources, including plants. This knowledge is site specific and rarely shared. Thus, knowledge exchange and adaptation to local conditions is the challenge addressed in this work.

In a first step, descriptions of pesticidal and antimicrobial plants used in Africa were extracted from the scientific literature and collected in a knowledge base called Knomana. In a second step, the development of a software was initiated (i) to navigate through Knomana to extract existing plant use descriptions, and (ii) to explore Knomana to establish new pieces of

knowledge, by combining existing ones. The latter allows to elaborate new hypotheses on local plant uses to be experimented, e.g., *Lantana camara* against *Fusarium oxysporum* in Burkina Faso.

In early July 2019, Knomana gathered 36.000 plant use descriptions for plant, animal, and human health from 260 documents, dated from 1957 to 2019. Ninety-six percent of the recorded descriptions concerned sub-Saharan African countries. An exploration method was elaborated to identify local plants to solve locally current or new sanitary issues. Among the identified plants, Knomana also informs on the ones treating human diseases to prevent the reduction of their effectiveness due to their excessive uses.

By promoting local plants to reduce pesticides and antibiotics' uses, this work aims to promote indigenous knowledge and the local biodiversity in order to improve the quality of life of the growers and all citizens.

Keywords: Knowledge management, plant-based products, one health, computer science, artificial intelligence

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