





# COMPARING THE POTENTIAL OF MEAT ALTERNATIVES FOR A MORE SUSTAINABLE FOOD SYSTEM

## MOTIVATION

This scoping review stresses the risk that non-holistic analysis of alternative proteins bear in promoting suboptimal solutions, and therefore the **need for a multidimensional approach**. For instance, a food product

## **RESEARCH QUESTION**

This paper evaluates the potential of plant-based meats, cultivated meat, insects, and single-cell proteins. Each option is assessed across four key dimensions: environmental performance, scalability, consumer acceptability, and animal welfare.

exhibiting favourable environmental performance but lacking scalability potential would likely have minimal transformative impact on food systems. Furthermore, supporting suboptimal solutions generates an opportunity cost in terms of the quantity of meat reduced.

# METHODOLOGY

The literature review employed three primary databases. Google Scholar and Web of Science were utilised, as they are both generalist databases offering complementary coverage. Additionally, the USDA National Agricultural Library database (SEARCH) was consulted, incorporating results from the Catalog and Articles database (AGRICOLA), PubAg, and the NAL Digital Collections (NALDC).

## **KEY RESULTS**

- Plant-based meats and single-cell proteins emerge as having the greatest potential for contributing to sustainable food systems.
- Cultivated meat could also contribute positively if it finds a unique market segment and overcomes scalability challenges.
- Insects demonstrate little promise and should not be considered a sustainable solution given the current state of evidence.

Biodiversity\*\*

Biodiversity\*\*





Performance of alternative proteins regarding the different parameters taken into account in this review. ('10' = best possible score; '1' = worst possible score) Environmental performance of alternative proteins compared with an average piece of meat. ('10' = much better performance; '1' = much worse performance)

#### **SUPERVISORS**

Romain Espinosa (CNRS, CIRED) Philippe Delacote (INRAE, CEC)

#### CONTACT

tom.bry-chevalier@univ-lorraine.fr

#### AUTHOR Tom Bry-Chevalier (1; 2)

### AFFILIATIONS

AgroParisTech-INRAE, BETA, Université de Lorraine, Nancy, France
Chaire Economie du Climat, Palais Brongniart, 28 Pl. de la Bourse, 75002 Paris.