

Exploring the production and export potential of cricket powder in Costa Rica



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Ileana Maricruz Bermúdez-Serrano^{1*}, Ana María Quirós-Blanco², Utz Dornberger¹

¹SEPT Competence Center, Leipzig University, Ritterstrasse 9-13, 04109 Leipzig, Germany

²Centro Nacional de Ciencia y Tecnología de Alimentos (CITA), Universidad de Costa Rica (UCR), Ciudad Universitaria Rodrigo Facio, código postal 11501-2060, San José, Costa Rica.

*Corresponding author: maricruz.bermudez@madebymade.eu



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INTRODUCTION

Costa Rica is a tropical country with perfect environmental conditions to raise crickets, thus a possible creation of a large-scale cricket powder production hub is seen as an economic opportunity for the country. Although there is no tradition of entomophagy in Costa Rica, in the last years there have been some local private and public initiatives aiming to promote and develop an edible insect sector. The Museum of Insects, The National Research Centre for Food Science and Technology (CITA) of the University of Costa Rica (UCR) and the Promoter of Foreign Commerce (PROCOMER) are the main public actors leading these efforts. A few entrepreneurs have started rearing and selling edible insects and processed products, such as Grillos en Costa Rica, Costa Rica Come Insectos, CRIC and Gricket House (Bermudez-Serrano, 2020).

Main Research Question: Is it feasible to establish a large-scale cricket powder production in Costa Rica, in order to supply the growing international market?

The research was divided in 3 stages/questions:

Stage 1: What are the main market needs and production requirements related to cricket powder in the international supply chain?

Stage 2: Is the current cricket powder production in Costa Rica compliant to the market needs and production requirements?

Stage 3: What are the main opportunities and challenges of the local entrepreneurial ecosystem?

MATERIALS AND METHODS

Stage 1: 5 key informant interviews with possible cricket powder buyers, current industrial producers in Vietnam and Thailand and sector experts + a visit to an industrial cricket powder production facility in Thailand (October 23, 2019).

Stage 2: 9 Interviews with entrepreneurs, local entomologists and business experts in Costa Rica.

Stage 3: 1-day stakeholders' workshop in San José, Costa Rica on January 21, 2020, with a total of 23 participants of the local entrepreneurial ecosystem.

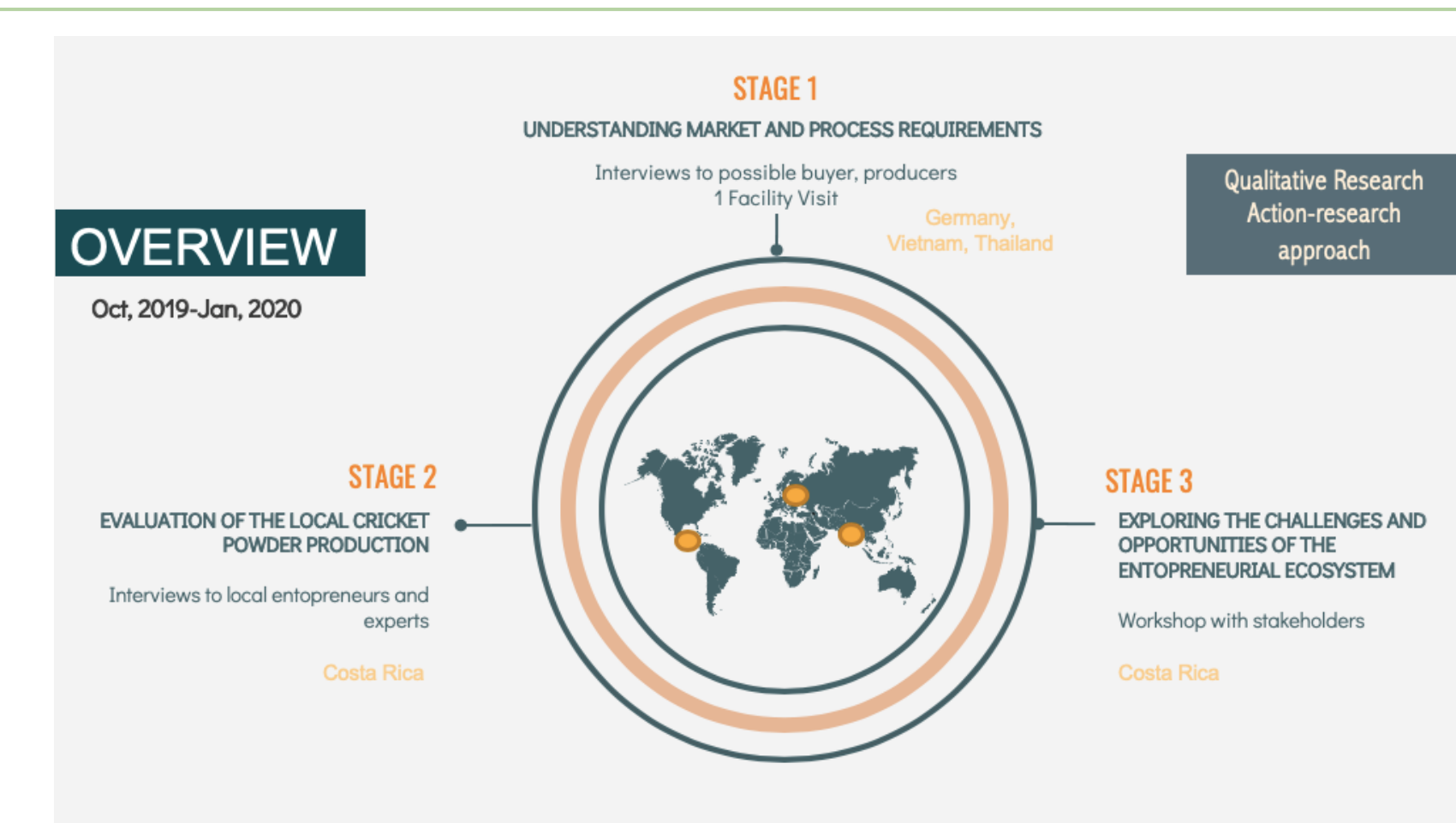


Fig. 1. Overview of the field research

RESULTS

Stage 1: What are the main market needs for cricket powder?

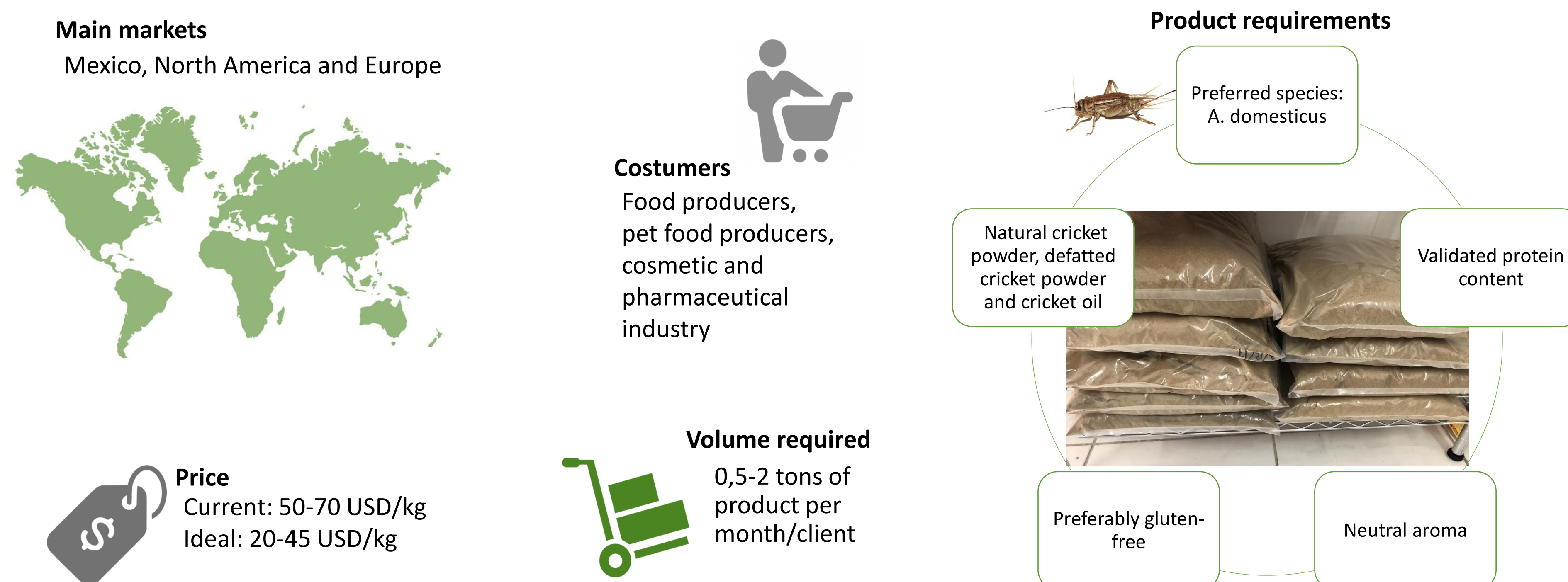


Fig. 2. Main identified market needs for cricket powder

Stage 2: How is the current cricket powder production in Costa Rica?

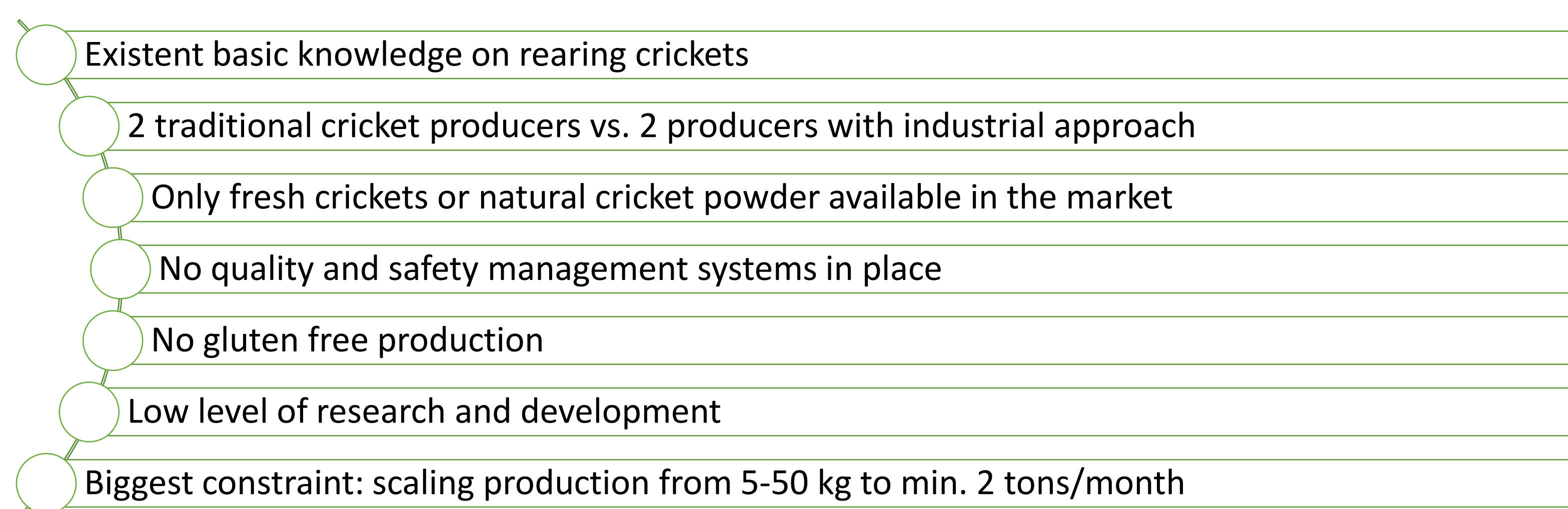


Fig. 3. Main characteristics of the current production in Costa Rica

Stage 3: What are the main opportunities and challenges of the Costa Rican entrepreneurial ecosystem

Table 1. Main opportunities and challenges identified in the Costa Rican entrepreneurial ecosystem

Systemic level	Concept investigated	Main Opportunities	Main Challenges
Meta	Local and international market potential	-Costa Rica's long history rearing and exporting insects (butterflies). -Costa Rica has an international image as a green country.	-Lack of a natural offtake market
	Social and cultural orientation	-The local public seems to be interested and curious about eating insects.	-Low consumer knowledge on consumption of insects and its benefits. -General poor innovation culture
Macro	Regulation	-Existent solid regulation related to wildlife protection.	-Lack of clarity in the existent regulation regarding the production of edible insects.
Meso	Support for entrepreneurs	-Existent SMEs support policy of the government -There are existent support institutions on entrepreneurship, innovation and business promotion	-General low private financing opportunities for entrepreneurs.
	Access to knowledge	-The academia is playing a key role in knowledge transfer. -There is knowledge on rearing crickets among producers and technical experts. -Existent research institutions and laboratories	-Lack of experts on mass production of edible insects. -Low training offer. -Low research on edible insects
Micro	Stakeholder networks and strategic orientation	-Producers know each other and have knowledge transfer practices. -The DESCUBRE Project promoting the establishment of an edible insect industry.	-There is no articulation between the public and private sectors and the academia -Lack of a sense of cooperation culture between producers

DISCUSSION AND CONCLUSION

Large-scale producing and exporting crickets in Costa Rica is seen as a feasible project within 5 years. The country's perfect weather conditions, its experience in the rearing and commercialization of butterflies and the solid base of academia and support institutions would allow the development of an edible insect industry. Scaling the production is the key challenge not only for being able to comply with the required demand but also to reduce the price and be more competitive in the international market. The creation of a producer's association, more research and training on edible insects and appropriate legislation are proposed as necessary strategies to achieve this goal.

REFERENCES

Bermúdez-Serrano, I.M., 2020. Challenges and opportunities for the development of an edible insect food industry in Latin America. *Journal of Insects as Food and Feed* 6: 537-556. <https://doi.org/10.3920/JIFF2020.0009>

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