

Participatory action research to co-create a design thinking product development toolkit with berry growers

Sumedha Garg¹, Emily Mayhew, Ph.D.², Wan-Yuan Kuo, Ph.D.¹,

¹Sustainable Food Systems, Department of Health and Human Development, Montana State University, Bozeman, MT, USA

²Department of Food Science and Human Nutrition, Michigan State University, East Lansing, MI, USA

We acknowledge and honor that we are on the traditional territories of the Apsáalooke (Crow), Niimíipuu (Nez Perce), Očhéthi Šakówiŋ (Lakota), Piikáni (Blackfeet), Séliš (Salish), Shoshone-Bannock, and Tsétséhéstâhese (Northern Cheyenne) Nations

INTRODUCTION & AIM

In the Intermountain West, USA, specialty crops such as cold-hardy berries (**Fig 1**) can help diversify agricultural landscapes and income sources for small farms. Since 2012, 162 specialty crops have been introduced to Montana^[1]. Value-added product development (PD) is a promising pursuit to enhance the economic return for such crops and improve the palatability, as prior studies have found some berries to have unique taste and textural qualities ^[2]. However, from the 27,048 farms in Montana, only 1% are engaged in value-added production ^[3]. PD can transform this region from primarily producing raw commodities to offering greater varieties of value-added products. This study aims to co-create a toolkit with berry growers which can support such endeavors.



Fig 1: From left to right, saskatoon, aronia, blackcurrant and haskap.

METHOD

Based on the principles of participatory action research (PAR) ^[4], a collaborative approach was undertaken (**Fig 2**).

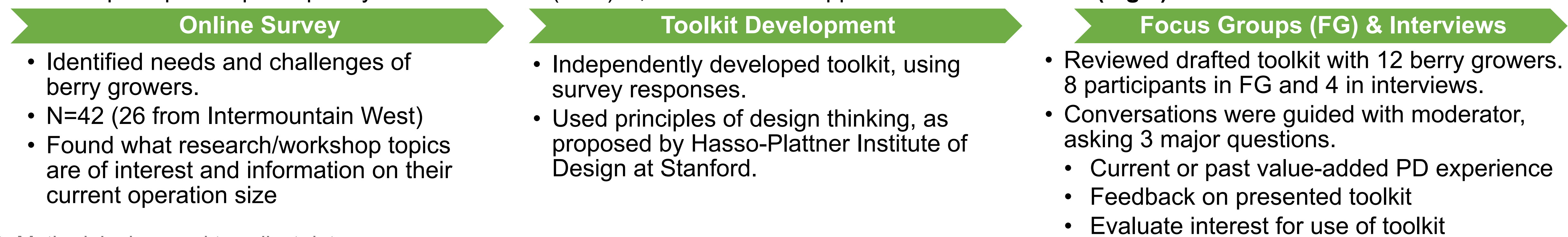


Fig 2: Methodologies used to collect data.

RESULTS

From the online survey, 76% of berry growers indicated interest in research/workshop topics related to value-added product development, and market and business planning. Qualitative responses also shared *“local collaboration with concerted efforts could result in developing wider, larger and faster growing business opportunities.”* This indicated a co-created toolkit will be a beneficial solution, hence, a toolkit was prepared (**Fig 3**).

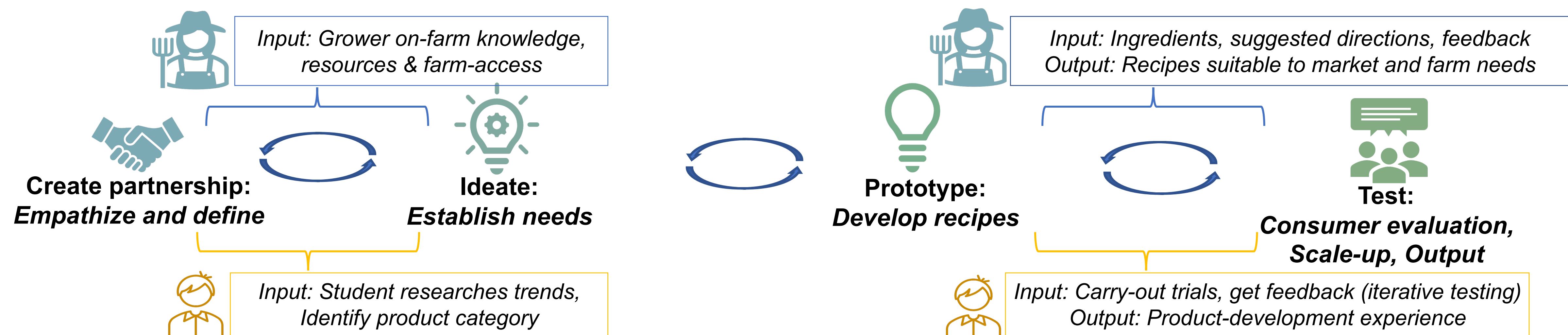


Fig 3: Proposed draft toolkit for engaging Montana berry growers in value-added product development.

During focus group and interviews, the barriers to product development for small-scale berry growers were primarily cost and resources. Berry growers further agreed that having a toolkit as presented can be successful—if it is integrated as part of coursework in semester-long classes. This will address issues of continuity and funding (with tuition fees covering the implementation costs). The other dominant themes found in these discussions are showcased in **Fig 4** below.

PARENT THEME	CHILD THEME	EXAMPLE QUOTE
Desired PD attributes	• Preservation, transport, packaging, branding and marketing.	“[With PD] can get the product to consumers at greater distances.”
	• Health	“I’m kind of interested in freeze-drying for its health properties.”
Barriers to PD	• Cost, resources	“I got good ideas; I just don’t have the time or resources to [action it].”
	• Environmental	“Our primary grower was a steady supplier for us for 3–4 years and got attacked by an insect...wiped out his whole crop.”
Changes suggested for toolkit	• Funding, partnership, timeline	“I’ve got ideas that I don’t know how to proceed with them, so yea, I think that would be great if we had somebody”
	• Maintaining intellectual property	“I guess I have mixed feelings because I think the testing and developing will be.. I mean something that’s more personal to the grower.”

Fig 4: Dominant themes and ideas found in the focus group and interviews with the berry growers interviewed.

CONCLUSION

- A design thinking toolkit of PD was co-created through PAR with berry growers (**Fig 5**).
- Major themes identified by berry growers to enrich the toolkit include needing resources and IP management to support and protect existing ideas. Berry growers believed the toolkit could increase PD activity.
- Promoting climate-resilient cold-hardy berries may benefit the local environment and food system.



Fig 5: FG between berry growers who participated.

ACKNOWLEDGMENTS

Funding for this project was made possible by the U.S. Department of Agriculture’s (USDA) Agricultural Marketing Service through grant 20SC02605. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA. We also appreciate the support received from the College of Education, Health & Human Development (EHHD Student Travel Scholarship), our partners at Western Agriculture Research Center, and the berry growers who participated in the study. Further thanks to Catherine McNeil and Sue Billman for reviewing this poster.

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