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| ACIAR_inline PC | |
|  | Annual report |
| project | **Uptake of agricultural technologies and best practices amongst farmers in Battambang and Pailin provinces, Cambodia** |
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Contents

[1 Progress summary 3](#_Toc42694824)

[2 Achievements against project activities and outputs/milestones 4](#_Toc42694825)

[2.1 Achievements to date 4](#_Toc42694826)

[2.2 Summary of achievements to date (for ACIAR website) 4](#_Toc42694827)

[3 Impacts 5](#_Toc42694828)

[3.1 Scientific impacts 5](#_Toc42694829)

[3.2 Capacity impacts 5](#_Toc42694830)

[3.3 Community impacts 5](#_Toc42694831)

[3.4 Communication and dissemination activities 5](#_Toc42694832)

[4 Training activities 6](#_Toc42694833)

[5 Intellectual property 7](#_Toc42694834)

[6 Variations to future activities 8](#_Toc42694835)

[7 Variations to personnel 9](#_Toc42694836)

[8 Problems and opportunities 10](#_Toc42694837)

[9 Budget 11](#_Toc42694838)

[10 Appendices 12](#_Toc42694839)

# Progress summary

This project aims to develop and measure a farmer-focused form of agricultural extension amongst Cambodian cassava farmers. The project is organised around the concept of a Problem-Solution Pathway (PSP), which is our way of extending and connecting consideration for not only ‘problems’ and ‘barriers’ but to farmers’ perceptions of solutions and how they might be implemented. Underlying the research is the contention that current efforts to support farmers tend to be ineffective because they do not include appreciation for the structures that limit farmers’ capacities and opportunities. The first two years of the project focused on understanding farmers’ perceptions and identifying possible support for those farmers, including survey and household interviews to determine farmer perceptions. The primary finding from year two involved analyses of the baseline survey and interviews with village leaders to uncover the priorities of participating farmers. This identification of 4 key farmer PSPs forms the ‘backbone’ of the remaining project activities and outputs:

1. Best practices for cassava production.
2. Pest and disease identification and management.
3. Debt, indebtedness, and mobility.
4. Stress, anxiety, and (un)happiness.

The third year of this project (covering the period from 2019-2020 (i.e., this annual report)) emphasised data analysis, with the majority of work focused on analyses of household interviews, which are being used to provide qualitative depth to the analysis of the the 4 PSPs, with each aligning with outputs, either already submitted, drafted, or in development. During this period, plans for outreach, uptake, impact, and measurement have been prepared for the final year of the project. Like the social science component of the project, during year three, data collection on the demonstration farms has come to a close, with analysis underway.

A key moment during the year-3 period was the mid-project review, which brought together most of the research team to present, analyse, and discuss preliminary findings from the social science and agricultural components. The meeting was assessed by ACIAR reviewers, who provided constructive comments for the remaining period of research, recommending an extra year of funding to ensure that the findings can be ‘returned’ to participants, with time to assess the usefulness and any impact of outputs for participants.

The emergence of the Covid-19 pandemic has ‘paused’ plans for outreach and uptake (including measurement of those actions), but the project remains ready to begin those activities once it is safe to do so. Both the social science and agricultural components of the project have ample data for analysis to occupy time while we await resolution of the Covid-19 pandemic.

## Outputs during this period

1. Cook, B.R.,  and Reed N. (2019) Report on baseline survey for farmers in 13 Cambodian villages.
2. Cook, B.R.,  Satizabal, P., & Curnow, J. (in review). Humanising agricultural extension. World development.
3. Lamb, V. and Kathleen, S. (in review) From sapphires to cassava: the politics of debt in Northwest Cambodia.  Acme: An International Journal for Critical Geographies
4. Satizabal P. and Cook, B.R. (drafted). The lives of small-scale cassava farmers? post-conflict rural livelihoods, struggles, and agrarian change in northwest Cambodia.
5. Alexandra, A., Cook, B.R.,  Satizabal, P. (in development) Pest and disease management: knowledge exchange & behaviour change.
6. Cook, BR. and Satizabal, P. (in development). Connection and disconnection amongst Cassava farmers in NW Cambodia: individualisation and risk amongst smallholders.
7. Cook, B.R., and Satizabal, P. (in development) Problem-Solution Pathways: farmer and village leader accounts of agrarian change in Northwest Cambodia.
8. Alexandra, A., Cook, B.R., Aye, T., and Satizabal, P. (2020). Cassava pest and disease pamphlet.

# Achievements against project activities and outputs/milestones

The period of 2019-2020 has proceeded relatively smoothly given the circumstances. The period began with a field visit by the Chief Investigator

##### 11**) July 3 2019 - July 18 2019**

**Trip Purpose**: 1) Begin outreach with development organisations in Phnom Penh; 2) meet with Cambodian team to prepare for mid-project meeting.

Central to the research are the partners who can utilise or help circulate findings from the research. This visit to Phnom Penh by the CI involved establishing and revitalising those relationships, as part of preparations for the final year of the project and efforts to ensure that the findings reach those interested, those who contributed, and those might help with further uptake. Meetings with representatives of the Food and Agriculture Organization (FAO), Agibuddy (<https://www.agribuddy.com/>), and the microcredit lender Angkor Mikroheranhvatho (Kampuchea) Co. (AMK).

The second half of this trip involved meeting with the Cambodian research team in Battambang. This was primarily to prepare for the upcoming mid-project meeting. The CI met with Montgomery, Phan, Yim, and Nou. The visit also prepared the logistics of the mid-project meeting, including food, accommodation, venues, and field visits.

##### 12**) September 6 2019 - September 21 2019**

**Trip Purpose**: Run pest and disease knowledge exchange with two farmer groups

The mid-project meeting was both very successful, while also noting areas for improvement. The CI emphasised research findings and the guiding intellectual questions arising from the project, but overlooked the need to more directly address the planned outputs from the project documentation. With help from the reviewers and the research team, the meeting was able to address both the team’s desire to explore and discuss the findings with the needs of assessors to document progress relative to plans. The mid-project report noted the emerging findings, the creative analyses, as well as the positive team dynamics. The reviewers also proposed an additional year to the project, as well as funding to cover employment of an RA.

## Achievements to date

***Objective 1: Determine farmer PSPs with reference to agricultural technologies and best practices.***

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| **RQs** | **Activity** | **Outputs/**  **Milestones (Responsible Partners)** | **Due date of outputs/ milestones** | **Date Completed** | **Comments** |
| 1.1 | Focus groups | 1. Run focus groups and participant observations in 12 villages, 6 times over 4 years. (See Gantt) 2. Conduct participant observations following focus group meetings in 12 villages, 6 times over 4 years. 3. Run field days with participants following each village visit in 12 villages, 6 times over 4 years. 4. **Report 1**: Establish a baseline survey for farmers in the 12 villages, emphasising agricultural crops, practices, and household characteristics. (Postdoc, Milne & Lamb) 5. **Report Combined into  report 1** ~~2~~: Identify Farmer PSPs with reference to agricultural technologies. Identify differences amongst sub-groups of farmers or households, with specific attention to the perceptions and experiences of female farmers, female-headed households, the poor, and the marginalised. (Postdoc, Milne & Lamb) 6. **Report 3**: Update trends in farmer perceptions (by sub-groupings). Determine response and perception of demonstration of farmer-identified crop, technology, or practice. (Postdoc, Milne & Lamb) 7. **Report 4**: Update trends in farmer perceptions (by sub-groupings). Determine response and perception of demonstration of farmer-identified crop, technology, or practice. (Postdoc, Milne & Lamb) 8. **Publication 1**: Paper exploring farmer perceptions of PSPs. (Milne, Lamb, & Farquharson) | Yr.3 m12    Yr.3 m12  Yr.3 m12  Yr.1 m12    Yr.2 m12    Yr.3 m12    Yr.4 m10    Yr.4 m12 | Q1 2019    Q1 2019  Q3 2019  Q2 2019    Merged with above    Ongoing/Paused | To be completed once we can return to villages |
| 1.2 | Home Visits |
| 1.3 | Semi-structured interviews |

For **Objective 1**, the team is presently at the data analysis and output stage. Numerous papers that draw on these data have been drafted or outlined, with discussions proceeding on which are optimal and which of the emerging outputs most closely align with the outputs that were originally proposed. In effect, we are reconciling whether the findings/data match what was planned and exploring differences, which are being treated as opportunities for new insights.

***Objective 2: Determine the feasibility of farmer-preferred PSPs, and the degree of alignment with existing and available agricultural technologies, using household and village leader interviews.***

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| **RQs** | **Activity** | **Outputs/**  **Milestones (Responsible Partners)** | **Due date of outputs/ milestones** | **Date Completed** | **Comments** |
| 2.1 | *Interviews with: 1) cassava farmer households, village leaders, in Cambodia* | 1. Conduct household interviews. 2. Transcribe and translate household interviews. 3. Conduct village leader interviews. 4. Transcribe and translate village leader interviews. 5. **Report 5**: Identification of the technologies that households and village leaders associate with farmer PSPs. Specific attention to female farmer PSPs and those of poor and marginalised. (Cook & Lamb) 6. Follow-up survey of village leader with conclusions (i.e., report 5) | Yr.2 m08  Yr.2 m08  Yr.2 m02  Yr.3 m04  Yr.3 m07    Yr.3 m06    Yr.3 m08    Yr3. m6    Yr.4 m2 | Q3 2019  Underway (75%)  Q4 2018  Q1 2019  Underway    Paused pending Covid safety  Paused pending Covid safety    Paused pending Covid safety | The vast majority of household interviews are complete, with transcription and translation underway (75% complete) |
| 2.2 |
| 2.3 | 1. **Report 6**: Describe how village leaders envision extension or adoption of the technologies associated with farmer PSPs. Identify the availability of technologies in Battambang and Pailin according to village leaders and the cost of the individual technologies for farmers. (Cook & Rickards) 2. Interview households to establish their final views on farmer PSPs and views on Agricultural sector in NW Cambodia. 3. **Publication 2**: Comparison of expert and farmer PSPs. (Cook & Rickards) |
| 2.4 |

For **Objective 2**, year 3 involved the final household interviews and a substantial shift to data analysis. PRD have completed translation and transcription of 240 of 300 household interviews, with Satizabal and Cook undertaking analysis and write up. At present, we plan to return one more time to farmer households and village leaders (ideally in Q2-3 of 2021), with the objective of comparison with existing data, deepening the preliminary findings, returning useful outputs to participants, and measuring the impacts of our collaborations.

***Objective 3: Demonstrate sustainable production of cassava using best practices and, in years 2 – 4, add demonstrations in response to farmer PSPs (Objective 1) using best practices and technologies identified by experts (Objective 2).***

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| **RQs** | **Activity** | **Outputs/**  **Milestones & (Responsible Partners)** | **Due date of output/ milestone** | **Date Completed** | **Comments** |
| 3.1 | Trial of cassava best practices in Battambang and Pailin. | 1. Soil samples of demonstration sites. 2. Plant first cassava crop 3. Harvest cassava 4. Soil sample and analysis. 5. Plant year 2 cassava. 6. **Briefing notes 1**: Monitoring and evaluation update on cassava demonstration for ACIAR and partners. (Sophanara & Montgomery) 7. **Pamphlets 1**: In Khmer and pictorially, publicise the full economic costs of sustainable cassava production. (Sophanara & Postdoc) 8. Harvest cassava 9. Soil sample and analysis. 10. Plant year 3 cassava 11. **Publication 3**: Establish the full costs and benefits (social, economic, and environmental) of sustainable cassava production? (Farquharson & Thiele) 12. **Pamphlets 2**: In Khmer and pictorially, publicise the full economic costs of sustainable cassava production. (Sophanara & Postdoc) 13. Harvest cassava 14. Soil sample and analysis. | Yr.1 m3  Yr.1 m5  Yr.2 m3  Yr.2 m4  Yr.2 m5  Yr.2 m5    Yr.2 m5    Yr.3 m3  Yr.3 m4  Yr.3 m5  Yr.3 m5    Yr.4 m5    Yr4. m3  Yr.4 m4 | Q1 2016  Q2 2016  Q1 2017  Q2 2017  Q2 2017  Ongoing    Ongoing    Q2 2019  Q2 2019  Ongoing  Ongoing | The briefing notes will arise following submission of Sophanara Phan’s Masters degree (Q4 2020)  The pictorial summary will arise following submission of Sophanara Phan’s Masters degree (Q4 2020)  Publication to follow submission of Phan’s masters thesis (Q4 2020)    The pictorial summary will arise following submission of Sophanara Phan’s Masters degree (Q4 2020) |
| 3.2 | Trial of farmer-chosen transitions or agricultural technology(ies). | 1. Identify and plan for farmer chosen demonstration. 2. Soil sample and analysis. 3. Implement farmer chosen demonstration 4. Harvest farmer chosen demonstration. 5. **Briefing notes 2**: Monitoring and evaluation update on farmer-chosen demonstration for ACIAR and partners. (Sophanara & Postdoc) 6. **Pamphlets 3**: In Khmer and pictorially, publicise the full economic costs of the farmer-chosen crop, technology, or practices. (Sophanara & Postdoc) 7. **Publication 4:** establish the full costs and benefits (social, economic, and environmental) of farmer-chosen technology? (Farquharson & Thiele) 8. **Pamphlets 4**: In Khmer and pictorially, publicise the full economic costs of the farmer-chosen crop, technology, or practices. (Sophanara & Postdoc) | Yr.2 m1  Yr.2 m1  Yr.2  Yr.3    Yr.3 m5    Yr.3 m5    Yr.4 m9    Yr.4 m5 | Q1 2018  Q1 2018  Q1 2018  Will not be able to harvest fruit during the project time period.  Cancelled due to lack of time and data  Cancelled due to lack of time and data    Switched to a publication on cassava best practices.  Switched to a publication on cassava best practices. | The time lag for fruit tree production is beyond the scope of the project. We have replaced publications, briefing notes, and pamphlets of fruit tree production with cassava production best practices. |

For **Objective 3**, the project has emphasised the team’s support of Sophanara Phan’s masters thesis. This is a reasonable action, as the data analysis for the degree involves rigorous analysis of the cassava production data, which is a key contribution of the agricultural component of the research. This effort represents a substantial investment by Montgomery, with the final harvest of cassava and management of the field sites remaining a demanding task.

***Objective 4: Measure adoption of agricultural technologies by farmers in Battambang and Pailin to explain why some groups adopt technologies and how organisations can align future efforts to improve adoption amongst different farmer sub-groups.***

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| **RQs** | **Activity** | **Outputs/**  **Milestones (Responsible Partners)** | **Due date of output/ milestone** | **Date Completed** | **Comments** |
| 4.1 | Follow-up interviews with farmers from each of the villages, ensuring coverage across farmer types (i.e., small, medium, large, poor, and female-headed). | 1. Identify non-participating villages for comparative interviews. 2. Conduct follow-up interviews. 3. **Publication 5:** The economics of cassava and alternatives for farmers in NW Cambodia (Farquharson & Rickards) 4. **Publication 6**: The perceptions and experiences of poor, marginalised, and female households in the context of agriculture in NW Cambodia. (Lamb & Milne) 5. **Publication 7**: Measure whether PSP-based approach to extension-adoption improves adoption; measured using the speed of any adoption or partial adoption, amendments or adaptations to technologies, satisfaction with technologies, and the extent of adoption amongst different groups (small, medium, and large scale farmers, poor marginalised, and female-headed households). (Cook & Milne) 6. **Report 7**: Final full project report. (Cook) | Yr.4 m3  Yr.4 m9  Yr.4 m10    Yr.4 m10    Yr.4 m12     Yr.5 m12 | Paused pending Covid safety - depending on when it is safe to return to villages, we will have to decide how we can access this data. | Within the final year of the project, we aim to revisit villages and village leaders to measure adoption and changes to farmer perceptions. |
| 4.2 | Presentation in 26 villages (13 participating and 13 non-participating) by Lakhon Komnit (LK) | 1. Village performance on topics of: 1) pest and disease; 2) cassava production best practices; 3) debt and happiness; 4) transition to fruit tree production. | Yr. 5 m02 | Presently not permitted to undertake village performances in Cambodia. |  |
| 4.3 | Follow-up interviews with attendees of the village presentations | 1. Report on: awareness, intention, practice change, and sharing with friends, family, and/or neighbours. 2. Academic publication on village theatre presentations as a method for awareness raising. | Yr. 5 m05    Yr. 5 m06 | Paused pending Covid safety. |  |
| 4.4 | Knowledge exchange (KE) with Provincial Departments of Agriculture | 1. Run a knowledge exchange with Pailin Department of Agriculture and Battambang Department of Agriculture | Yr. 5 m05 | Ongoing | The data for this knowledge exchange will be drawn from Sophanara’s masters degree. |

For **Objective 4**, the primary planned activities were to have been the final revisiting of farmer households and village leaders. Unfortunately, these plans are presently delayed while we await resolution of the Covid-19 pandemic. A ‘silver lining’ of this situation is that the team has been able to focus on transcription, translation, and data analysis of existing data. While not ideal, this will benefit the final phase of the research once it is safe.

## Summary of achievements to date (for ACIAR website)

ASEM/2013/003 has completed its primary data collection for both the social science and agricultural component. The team continues to analyse data while we await opportunities to return to villages following the Covid-19 pandemic. In the final phase of the project, we will return to villages and government in order to return outputs (pamphlets, field schools, and knowledge exchanges) and to account for any changes in practices or perceptions. The team is presently transcribing and translating 300 household interviews, which we are analysing alongside the initial baseline quantitative survey. Drafted outputs include

* More than 400 household surveys have been undertaken and statistically analyzed.
* Interviews with all 13 village leaders have been undertaken, exploring themes of village composition, leadership, climate, history, economics, infrastructure, and problem-solutions. The interviews have been transcribed and translated for analysis and inclusion throughout project outputs and as a way of comparing farmer perceptions with those of village elites.
* Interviews with 300 farmer households complete, with transcriptions and translations of 11 of 13 villages completed.
* Three years of cassava trials have been completed.
* A village-scale, two-week intensive has been conducted in one village.
* Two knowledge exchanges (a form of focus group discussions) have taken place on the topic of cassava pest and disease reduction; additional farm visits have been undertaken in order to measure behaviour change amongst participating farmers.
* 2 academic outputs have been submitted for peer-review, with several additional papers in development. A project report analysing the quantitative baseline survey has been completed, as has a pamphlet on pest and disease management.

# Impacts

## Scientific impacts

It is not possible to calculate impacts at the present stage of the project.

## Capacity impacts

It is not possible to calculate impacts at the present stage of the project.

## Community impacts

It is not possible to calculate impacts at the present stage of the project.

## Communication and dissemination activities

The project website (<https://farmerdecisionmaking.com/>) has undergone a third major updates (February of 2018, Sept 2018, and July 2019). The project receives a small but consistent level of online traffic, with some emails arising. The project website is now designed to also act as a focal point for the research team. A section was added for the mid-project, including background information and documentaries on Cambodia, news articles pertinent to the project and findings, and the preliminary schedule. A section on data findings was also added, with data outputs now available online, including from the household survey, household interviews, village leader interviews, and pest and disease knowledge exchange.

During the pest and disease knowledge exchange a photographer and videographer were present, along with the graphic designer. Our aim is to ensure a variety of graphical data sources for analysis and, ideally, to aid in subsequent sharing of the findings with farmers. Communications and dissemination of project findings to farmers will begin following the mid-project meeting and continue throughout 2020.

A key lesson from 2018 was the need for better ‘capturing’ of project communications as the project progresses. Communications have had to evolve during the Covid-19 pandemic, with the focus of the research team on support for our Cambodian team members struggling to navigate extreme uncertainty and poor medical services in Battambang and Pailin.

# Training activities

Sophanara Phan’s masters degree continues and will be submitted for review in Q4 of 2020.

# Intellectual property

Publications being produced will adhere to IP regulations, though the team plans to produce ‘briefs’ with each published paper in order to publicise the output while also communicating the main points in an open access format aimed at practitioners and those who have contributed to the project, including farmers.

# Variations to future activities

Following the mid-project meeting, a variation was submitted and approved.

# Variations to personnel

None

# Problems and opportunities

Covid...

# Budget

Remains on target, though changes are presently in a ‘holding pattern’ while we await resolution of the pandemic. I envision substantial changes to the planned activities and budget if we are unable to return to villages before Q3 2021.

# Appendices

Appendix 1: Annual Project Report Appendix One Publications list (See link on ACIAR website - Microsoft Excel document)

Other Appendices considered important by the project team.