



INTERNATIONAL JOURNAL OF  
MODERN TRENDS IN  
SOCIAL SCIENCES  
(IJMTSS)  
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## UNDERSTANDING MICRO FARMERS' MOTIVATIONS AND DECISIONS ON CHALLENGES FACED IN MALAYSIA

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### Article Info:

#### Article history:

Received date: 30.10.2022

Revised date: 07.11.2022

Accepted date: 15.11.2022

Published date: 31.12.2022

#### To cite this document:

Othman, A. A., Md Dahlan, J., Mat Din, S. Z., Abd Ghani, R., & Mohd Ali, N. (2022). Understanding Micro Farmers' Motivations and Decisions on Challenges Faced in Malaysia. *International Journal of Modern Trends in Social Sciences*, 5 (22), 37-48.

DOI: 10.35631/IJMTSS.522004

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### Abstract:

Despite years of industrialisation, Johor is still a leader in agriculture. The state is Peninsular Malaysia's major agricultural producer, and it has the third-highest official agricultural productivity in Malaysia. The growing of oil palms, various fruits and vegetables, poultry, pigs, cut flowers, and ornamental fish are among Johor's top agricultural strengths. This study brings new understanding to the existing literature, highlights new ways of looking at Malaysian micro farmers. Through this study, a better understanding of the challenges faced by micro farmers. Several sessions of semi-structured interviews were conducted with the selected farmers. Due to the Controlled Movement Order, we had to carry out the interviews via Google Meet. That was a great challenge in our data collection. The problems identified from this study are market price of crops, ownership of land, quality of crops, latex yield, pest infestation and workforce. Unlike the larger plantations, they depend on government subsidies and assistance during the trying times. They also made suggestions to overcome day-to-day farming challenges that may help them improve their economic and personal life for themselves and their families.

### Keywords:

Agriculture, Micro Farmer, Plantation, Sustainable Development Goals, Segamat, Johor

## Introduction

Refining micro farmers' involvement in realizing multiple Sustainable Development Goals (SDGs), mainly in Malaysia remains largely unheard of. This is particularly true in Johor, albeit agriculture remains one of the most imperative sectors (the third-highest official agricultural productivity in Malaysia) and is dominated by micro farmers. Despite their massive involvement in this agriculture sector and the potential to be a socially sustainable business, particularly in Segamat Johor, these micro farmers still face some challenges and obstacles in apprehending multiple SDGs. Furthermore, these micro farmers are perceived to be underdeveloped and incompetent to generate stable income. Therefore, there is a need to understand the agriculture activities carried out by micro farmers, essentially in Segamat Johor. On the same note, it is crucial to determine the types of challenges faced by these farmers to respond to the above problem. Such effort is seen to bring a fresh perspective to an existing issue by looking into a different group of actors explicitly the micro farmers.

## Literature Review

Growth cannot be sustained through protectionist measures and increasing subsidies in the agriculture sector (Tengku & Chubashini, 2009). Thus, policy in agriculture was changed to make sure the policy would give a positive impact on the economy. However, there are some challenges faced by the micro farmers when the policy changes.

According to Baki (2009), challenges in the new millennium are poverty persistence among the rural farming community, traditional agricultural systems, continuing pressure on the deterioration of the natural resource base, labor-intensive plantation agriculture which faces the imperative regarding foreign labour, low returns from agricultural investment, stagnating prices of commodities, high costs of land and volatile market forces.

One of the policy thrusts in the Ninth Malaysia Plan is enhancing the income of smallholders, farmers and fishermen. But it is seemingly difficult to achieve because uneconomic and small farm sizes will not allow them to rise. Instead, many small inefficient farmers will drag down the potential growth of the sector. (Tengku & Chubashini, 2009).

Not only had the problem of land, Jamal & Yaghoob, (2016) also stated that shortages of domestic labor would be one of the issues in the future roles of the agricultural economy in Malaysia. The unattractiveness of the minimum wage policy for domestic labor and increasing reliance on foreign sectors affect Malaysian agricultural competitiveness in the long run.

Muhammad Fadzli Ali et al (2021) found that the most factor decline in rubber plantations is the impact of prolonged low prices of rubber. It allows smallholder rubber farmers to convert rubber plantations into other crops or leave farming to find non-agricultural jobs. Second, the time required for planted rubber trees to mature before harvest takes approximately five years and when the rubber prices are low, smallholder farmers tend to stop fertilizing them. Because of this, production capacity is limited when the prices are high where it is supposed to have an incline in production. Third, because of the economic recession between 2018-2019, smallholder farmers cleared fell rubber trees for timber or converted them to other agricultural products such as palm oil that only need lower time yields. They have cleared fallen rubber trees to get instant income to survive during the economic recession.

## Methodology

The study adopted the exploratory research design. Exploratory research is defined as research used to investigate a problem that is not clearly defined. It is conducted to have a better understanding of the existing problem, but will not provide conclusive results. For such research, a researcher starts with a general idea and uses this research as a medium to identify issues that can be the focus of future research. An important aspect here is that the researcher should be willing to change his/her direction subject to the revelation of new data or insight. Such research is usually carried out when the problem is at a preliminary stage. It is often referred to as the grounded theory approach or interpretive research as it is used to answer questions like what, why, and how.

The data were collected through a semi-structured interview approach. Initially, we planned to conduct focus group interviews, face to face. However, due to the Covid-19 pandemic and Movement Control Order commenced in March 2020, we were unable to do so. So we resorted to virtual interview sessions via Google Meet. For the convenience of the farmers, two interviews were administered in person. Interviews ranged from 30 to 80 minutes. Notes were recorded during the interviews in an attempt to capture the responses as close to verbatim as possible.

While we may get a lot of information from public sources, sometimes during the in-person interview, we will gain in-depth information on the subject being studied. Such research is a qualitative research method. An interview with a subject matter expert can give you meaningful insights that a generalized public source won't be able to provide. Interviews are carried out in person or by telephone and have open-ended questions to get meaningful information about the topic.

This study utilized multiple methods combining semi-structured interviews, focus groups, and participant observation. Multiple method is an approach that combines research methods to triangulate and complement findings (Greene, Caracelli, & Graham, 1985).

## Sampling

The data collection process was carried out in four steps.

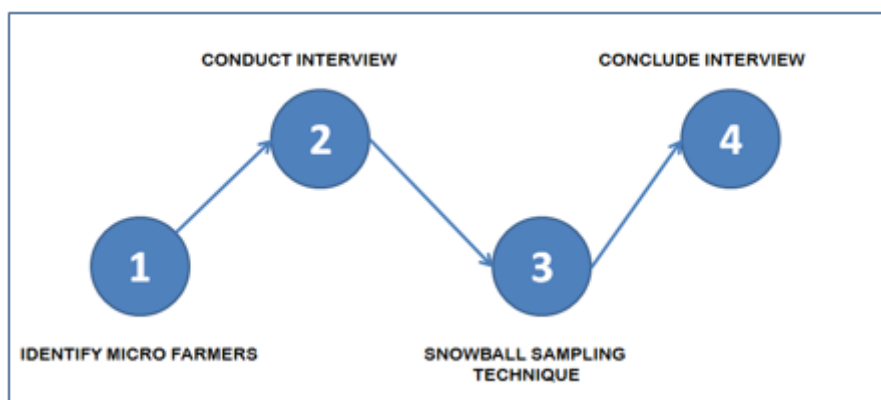


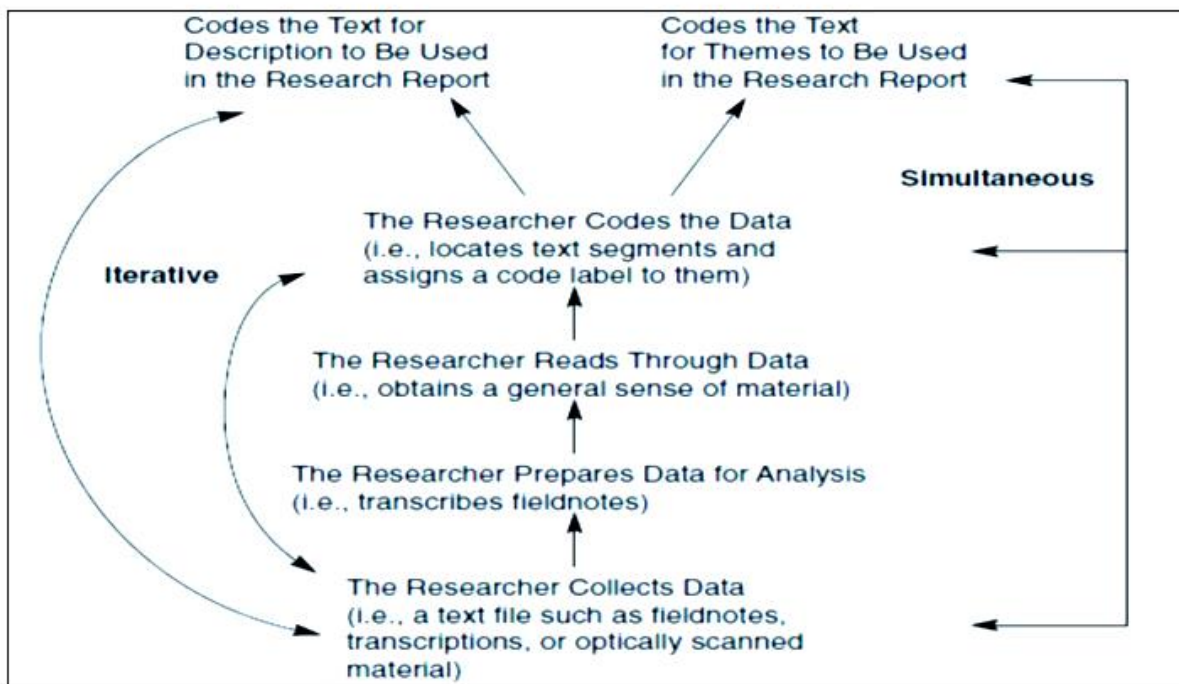
Figure 1: Sampling

The methods for this study were highly participatory, integrating semi-structured interviews, focus groups and participant observation, — five farmers acting as key informants and

advisors. These qualitative methods grounded the research in the farmers' experience, utilizing their words and actions as qualitative data. The study participants (as in Figure 1) were purposely selected to represent the types of small farms who were in Segamat. The data analysis utilized textual analysis, allowing themes to be developed in the process of coding and categorizing the data. These qualitative methods provided depth and allowed the data to direct the research. In this way, the study conveys the farmers' perspective.

### Data Analysis – Textual Analysis

The study adopted the textual analysis as guided by Creswell & Guetterman (2019).



The qualitative content analysis scheme (Creswell, 2012, p.237)

### Figure 2: Process of Textual Analysis

The textual analysis involves understanding language and/or pictures in texts to gain information regarding how people make sense of and communicate life and life experiences. Visual, written, or spoken messages are cues that communication may be understood. The analyst must understand the broader social structures that influence the messages under investigation (Allen, 2017). Figure 2 illustrates the textual analysis process as described by Creswell & Guetterman (2019).

The process of preparing the transcript was the hardest. We need to listen to both verbal and non-verbal words mentioned during the interview. Using textual analysis, we did not accept answers for each of the questions wholly. Sometimes, they mean differently, or answers that we are looking for were mentioned when answering other questions. The textual analysis generates themes from the transcripts. We used highlights (Figure 3) to differentiate the codes and themes.

Transcribing requires those involved to understand, establish, and assume a set of principles and practices, in an attempt to harmonize transcripts and, consequently, avoid wasting time and work and interpersonal conflicts (Azevedo, 2017). Therefore, only one person was responsible for this task to ensure a clear description (and understanding) of the procedures and decisions and their potential repercussions. The recorded interview sessions were about 300 minutes or 5 hours but the transcribing took a whole month to be completed.

PROFIL	RESPONDENT 11	RESPONDENT 12
1) PENGENALAN DIRI	23 TAHUN KULAI BEKERJA SHAH ALAM	<ul style="list-style-type: none"> <li>Asal: KAMPUNG SERI PANTAI SENGARANG, BATU PAHAT, 83200 Johor</li> <li>Hanya dia dalam keluarga yg menyambung pelajaran</li> <li>Menyambung pelajaran utk mengubah taraf hidup keluarga, menjadi contoh kepada adik2/keluarga</li> <li>BERNIAGA</li> </ul>
11) APA YG MENDORONG AWK UTK MEMBUAT PERUBAHAN	PENGARUH KELUARGA, TAHAP PENDIDIKAN YANG BAIK.	<ul style="list-style-type: none"> <li>Menyambung pelajaran utk mengubah taraf hidup keluarga, menjadi contoh kepada adik2/keluarga</li> <li>ingin menjadi contoh kepada komuniti</li> </ul>

Figure 3: Interview Transcript

### Findings

In this study, we attempt to explore what are the agricultural activities carried out and challenges faced by the micro farmers in Segamat.

These are the questions asked during the interviews.

Q1: Types of Crops (for micro farmers)

Q2: What are the problems faced in your involvement in the field of agriculture?

Q3: How much assistance has government agencies received so far?

Q4: To what extent does Johor (Segamat) state development policies and plans influence your agricultural management?

Q5: To what extent is the use of the latest technology applied? What are the catalysts to the adoption of the latest Technology?

Q6: What is your plan in the management of this agriculture?

Q7: What are your hopes for the future?

The experience level of the farmers in this study varied widely from farmers with no prior experience to farmers that were raised on the farm they were operating. The age of the farm businesses in this study ranged from one year to a second-generation farm that had been operating continuously for more than 30 years. Few of the farms in this study began as farmers, after retiring from a full paid employment. Half of them began their farms less than five years ago. They started their farms with no previous hands-on farming experience, and only one of them was raised on a farm.

### ***Q1: Types Of Crops***

The farms in this study produced diverse products within their production type and integrated different production types into their farm operation. The farm's primary products were rubber. This direction of the sector was set by the British when Malaysia was still its colony, by concentrating on export crops such as rubber, palm oil, and cocoa in the 1960s (Syahaneem Mohamad Zainalabidi, Fatimah Mohamed Arshad & Kusairi Mohd Noh, 2014). The first three National Agriculture Policies focused on export crops, until 2010. After that, the Fourth National Agro-food Policy was introduced in 2011 until today.

Their primary crops are rubber. Others include vegetables, cocoa, palm oil and livestock. The farms in this study practiced an intercropping system or mixed farming, growing two or more production types (Leeuwen S.V, 2019). Such activities involve planting more than one type of crops or involve integration with livestock/fisheries in one area unit for economic, biological or environmental purposes. Such diversity of activities can reduce risk and dependence on rubber as the main crop takes years before the latex can be produced. Thus, the use of the rubber land can increase farmers' productivity and income sustainably. This system can also increase the viability of small rubber plantations.

This study has interviewed six respondents among micro farmers in Segamat. Table 1 is the profile of the respondents. The farms varied in types of crops, acreage, and locations.

**Table 1: Respondents' Profile**

NO.	NAME	EXPERIENCE	SIZE OF FARM	TYPES OF FARMING
1	Respondent 1 (Amir Ismail)	Graduate of Agriculture Studies, UiTM Pahang	4 acres	Rears deer farming, rubber estate and oil palm pantations
2	Respondent 2 (Haji Zainal)	Pensioner, Polis Bantuan UiTM Johor	Less than 3 acres	Rubber and fruit tress including durian
3	Respondent 3 (Ustaz Sidek)	Pensioner, Senior Lecturer ACIS UiTM Johor	1 acre	Banana, vegetables and rubber
4	Respondent 4 (Haji Norman)	Ex-staff of FELDA	50 acres	Pineapple
5	Respondent 5 (Sujarmo)	Staff of UiTM Johor	3 acres	Cocoa, fruit trees and rubber

### ***Q2: What Are The Problems Faced In Your Involvement In Agriculture?***

From the interviews, there were several problems identified. The respondents in the interview plant different types of crops. Therefore, they face different challenges.

#### ***Market Price***

Respondent 1 and Respondent 2 are smallholders who cultivate rubber plants. Both of them mentioned that their main problem is the uncertainty of the selling price. They sell to licensed latex buyers who then sell to licensed agents at an agreed price. In the past, these smallholders

did not process the latex to cuplump themselves, so they will either have a communal process centre or the intermediaries who buy latex from them will process it into cuplump.

During the interview, Respondent 2 disclosed that his average income declined a lot when the price of latex was around RM2.40/kg. He claimed that in 2008, the price of latex was more than RM7.00/kg and he earned an average gross income of about RM5,000 a month. However, when the price dropped, RISDA gave out Bantuan Khas Kejatuhan Harga Getah to smallholders affected.

Respondent 3 planted vegetables on his farm alongside bananas and other fruit trees. His vegetables are sold to Pasar Tani retailers in Segamat. He cannot set the selling price because the seller sets it. He knows the price is much lower than the market price. However, he cannot market himself. Vegetables also cannot be stored for long, so he sells them when the seller comes to his farm.

### *Land Ownership*

Respondent Respondent 1 mentioned that the main problem was land ownership. The problem of land ownership is critical when applying for subsidies and anything related to it. Subsidies to farmers are provided by government agencies, for example, Rubber Industry Smallholders Development Authority (RISDA).

In reality, these lands were inherited from their forefathers. After they die, some lands are then passed down to their children or siblings. This goes on for many generations and therefore the land is divided and owned by more than one name in the family. The land applying for the subsidies must have a valid possession grant (RISDA, 2022).

When land is owned by more than one person, the application for subsidies may come from more than one of the owners. This can be disputed among other family members.

This can cause conflict among the owners. To resolve this, the family must agree to allow only one person to claim subsidies per title deed even though the land is owned by many names.

There is also an issue of the use of Bumiputra-owned house land or agricultural land. On agricultural land ownership, owners are not allowed to build houses or use them for other agricultural purposes. This causes problems when they want to get subsidies from government agencies.

Another respondent, Respondent 2 explained that his farm used to belong to his father-in-law. He and his wife have been living on the land since married. So he had planned to buy over the land and the farm from his father-in-law before he retired from UiTM. In the future, he planned to pass over the farm to his children but none of them seems to be interested. They are working outside of Segamat and earn better income.

Respondent 5 works as a librarian in UiTM Johor full-time. During his free time and weekends, he attends to his farm. His biggest challenge was monetary. He grew in a farm and watched his father grow crops and he liked to have one for himself later. He started to buy land closest to his home and now he owned three acres of land. He planted cocoa as his main crop, in response to the call of the government at the time. Then, most of his income as a librarian was spent on the farm. He did not ask for any subsidies as his farm size is too small to qualify for any assistance.

### ***Crops***

As for Respondent 4, he began his pineapple plantation after resigning from FELDA. He has always been interested in the future of pineapple cultivation in Malaysia. On his 50 acres of farm, Respondent 4 planted MD2 pineapples. His problem is not being able to find suitable land for him to expand. The export demand is high. There is an increase in demand from Europe (Utusan Malaysia, 2022), China and the Middle East for this Malaysia's pineapples, especially for the MD2 variety and local varieties such as N36 and Josapine (Berita Harian, 2022). According to Datuk Zahari Sarip, the Chairman of the Johor Agriculture, Agro-based Industry and Rural Development Committee, the exports are increasing and every week we receive requests for 1,000 containers that will be placed at the distribution hub in Germany for markets around Europe (Utusan Malaysia, 2022).

### ***Latex Yield***

As for Respondent 2 and Respondent 1, they both face problems with the quality of latex. This depends on the clone type and their tapping skills.

A good clone of a rubber tree will have thick tree bark and a lot of latex. They will be good for as long as twenty years. Trees with thicker bark are more valuable. Some of the cheaper saplings have thinner bark. The duration of yield latex from these types of trees is shorter, usually about 10 years and needs to be replanted. The resale value is less and sold as plywood.

As for tapping skills, usually, a paid worker will not be mindful and do it roughly. It will quickly damage the trees. Unlike the owners themselves, they do the tapping. They will be more careful to make sure the trees can yield for longer.

### ***Pest Infestation***

The excessive use of insecticides is dangerous for crops and the environment. However, it is necessary to protect the crops from damage and attack. The use of pesticides is still necessary for any type of crop, especially in the growth stage.

All the respondents agreed that the increased price of fertilizer has added cost to their operations. The subsidized fertilizer is insufficient for the size of their farm. So farmers have to spend their own money to buy more fertilizer.

### ***Labour***

The short supply of the workforce in agriculture is indeed a problem for the country. The country allows the entry of foreign workers for agriculture and plantation.

The majority of the farmers interviewed are retirees and therefore they work on their farms. It cost them almost half of their income to employ staff to work on their farms. A major cause of the problem is not many young local people interested in farming. The wage received is not commensurate with the workload. Young people prefer to work in the manufacturing sector. So farmers have to employ single mothers or elderly men to work on their farms.

Respondent 5 works full-time at UiTM and has problems focusing and attending to his farms but he managed to find time for his passion for farming. He spends his free time after work and during weekends. He does hire workers but still is not confident about the results of the work.



***Q3: How Much Government Agency Assistance Have You Received So Far?***

According to Respondent 2, rubber and palm oil were regulated by RISDA. Since 2000, palm oil has been administered by the Malaysian Palm Oil Board (MPOB). The two agencies (RISDA and MPOB) provide supports to the smallholders and planters, which are:

- o Fertilizer
- o Pesticide
- o Sapling (R&D)
- o Consultation
- o Marketing
- o Training

According to Respondent 2, when the price of rubber is less than RM2.50/kg, the government provides assistance to cover the loss of income. Such financial assistance is also delivered to smallholders who faced weather problems such as monsoon and drought. However, the smallholders must be registered with RISDA before they can qualify for additional assistance. However, Respondent 2 does not make the claim frequently because the process is troublesome.

Respondent 4 told us that the pineapple planters need to have their capital to plant and harvest before they can get help from Lembaga Nanas Malaysia (LNM). He said it took about 14 months from planting to harvest.

This may affect the development of pineapple production in Malaysia. Although it has a good market and encouragement from the government, it may be an obstacle for farmers who want to venture into pineapple farming. This is also true according to Ahearn and Newton (2009) found that the main challenges for beginning farmers are high start-up costs and insufficient land for sale or lease.

The agencies also provide technical and development support for the future of the industry. The smallholders fail to benefit from the subsidies and incentives because they are not registered with these government agencies. They are family owned and small in size.

***Q4: To What Extent Do The Development Policies And Planning Of The State Of Johor Affect Your Agricultural Management?***

Our respondents, Respondent 1, Respondent 2 and Respondent 3 shared with us that the rubber plantations are regulated by RISDA and not by the state government. However, the encouragement by the state government has helped larger rubber plantations in increasing their size and market. The price is determined by the demand of the global market (Respondent 2, Respondent 1 and Respondent 3).

Respondent 5, the only one who plants cocoa among our respondents, told us that he planted cocoa simply because it requires the least manpower from planting to harvest. His coconut trees are also durable and require less attention during growth and last a long time until maturity.

***Q5: To What Extent Is The Use Of The Latest Technology Applied? What Are The Catalysts To The Adoption Of The Latest Technology?***

The micro farmers interviewed could not mention any specific technologies applied in the local agricultural scene. However, there are several innovative ways of handling pesticides and the quality of rubber planted among the farmers due to the size of their plantations.

### ***Pesticide Control***

Previously, spraying the crops with a pesticide used a manual poison pump. Nowadays, they use an electronic pump that uses batteries. They can complete their work faster and safer. In addition, fertilizers are formulated for better fertilizer and weed control.

### ***Rubber Tapping Method***

There are newer clones of rubber sapling introduced by researchers that promised higher yields per hectare per year. These micro farmers do not plant them because those clones are expensive and not economical for their small plots.

### ***Automated Rubber Tapping***

In larger plantations, this technology would address Malaysia's labor challenges, though may not be economically viable for small planters, according to the respondents interviewed. Their plantations are not large scale, and not as sophisticated compared to other fields in Indonesia.

### ***Q6: What Is Your Plan In The Management Of This Agriculture?***

The respondents interviewed wish to continue as long as their health permits as their children are not interested in continuing with farming. Respondent 5 wishes to keep working full time, as agriculture just fills time.

Respondent 4, on the other hand, wishes to bring the name of Segamat to the international level together with pineapple products. He has collaborated with UiTM Johor for encouraging pineapple crops as income-generating activities for the university.

### ***Q7: What Are Your Hopes For The Future?***

All the respondents have different expectations for the importance of agriculture as a source of food and better use of human resources, both foreign and local workers.

Employment opportunities

They would like to encourage young people to enter agriculture as a means to get out of unemployment. There are a lot of opportunities and incentives by the government for those who have land, especially in rural areas.

### ***Pineapple***

Respondent 4 hoped the government will seriously market pineapple and its by-product to the international market, as a Muslim product, thus helping Muslim-owned farms.

### ***Abandoned Land***

The respondents encouraged young people to join groups, and share with many abandoned land as an example of wild land for agriculture and livestock

### **Conclusions**

The research was conducted during the pandemic and there were challenges in gathering information from the identified respondents. However, we managed to conduct five interview sessions, both online and offline. We are glad that all the respondents had some experience using the online platform for the interview sessions.

Most of the respondents are pensioners and work on their plantations after retiring. Two of the respondents work on their plantations while having a full time job. The activities carried out by these micro farmers are almost the same. They hoped that the younger generation will

consider farming as a career as it takes a lot of strength and effort to work as farmers. The abundant land space available should be converted to vegetable farming. This is in line with the National Agro-food Policy 2.0 ((2021 - 2030) launched in 2021.

As for the challenges, these micro farmers identified market price of crops, ownership of land, and quality of crops, latex yield, pest infestation and workforce, also mentioned in Baki (2009). The interviewed pensioners expressed that their children are not interested in carrying on their farming activities. They have moved to the cities and have full time employment. For now, the farmers have to employ Indonesian labors as mentioned in Jamal & Yaghoob, (2014).

### Recommendations

This study is conducted in an effort to offer a voice for a group of actors namely the micro farmers. Relying on the fact that macro farmers contribute a significant involvement to agriculture productivity in Segamat Johor, it is crucial to respond well to the grievances and challenges faced by them. Our results of the study suggest that more exertion needs to be invested in the development of micro farmers' resilience framework. More specific should look into the concept of a sustainable micro-farming agriculture model by taking into account problems that they faced such as price fluctuation, ownership of land, and workforce scarcity. This is in response to the specific nature of their challenges that require a different approach to anticipating them.

### Acknowledgement

This work was supported by the LESTARI SDG Triangle 2019 Research Grant [600-RMC/LESTARI SDG-T 5/3 (074/2019)].

### References

- Agricultural Development in 8th Malaysia Plan, <https://www.epu.gov.my/sites/default/files/2020-03/Bab%208%20-%20Pembangunan%20Pertanian.pdf>, viewed on 5 August 2022
- Ahearn, Mary & Newton, Doris. (2009). *Beginning Farmers and Ranchers*. United States Department of Agriculture, Economic Research Service, Economic Information Bulletin. 10.2139/ssrn.1408234.
- Allen, M. (2017). *The SAGE Encyclopedia of Communication Research Methods* (1st ed.). SAGE Publications, Inc.
- Azevedo, V., Carvalho, M., Fernandes-Costa, F., Mesquita, S., Soares, J., Teixeira, F., & Maia, A. (2017). Interview Transcription: Conceptual Issues , Practical Guidelines, and Challenges. *Revista de Enfermagem Referencia*, 4(14), 159-168.
- Bakar, B. (2009). *The Malaysian agricultural industry in the new millennium: Issues and Challenges*.
- Berita Harian, <https://www.bharian.com.my/berita/nasional/2022/06/966730/nanas-malaysia-dapat-permintaan-tinggi-dari-negara-negara-eropah>, viewed on 4 Aug 2022.
- Creswell, J., & Guetterman, T. (2020). *Pearson etext Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research -- Access Card* (6th ed.). Pearson.
- Greene, J. C, & McClintock, C. (1985). Triangulation, In *evaluation: Design and analysis issues*. *Evaluation Review*, 9, 523-545.
- Impact of biofuel development on Malaysian agriculture: A comparative statics, multicommodity, multistage production, partial equilibrium approach, July 2016, *Food and Energy Security* 5(3)

- Leeuwen, Sanne van (2019), Analysis of a pineapple-oil palm intercropping system in Malaysia. Wageningen University & Research. <https://perennialcrops.wur.nl/analysis-pineapple-oil-palm-intercropping-system-malaysia>
- MF Ali, MA Akber, C Smith, AA Aziz, , The dynamics of rubber production in Malaysia: Potential impacts, challenges and proposed interventions, Forest Policy and Economics 127, 102449
- Nenas MD2, <https://www.utusan.com.my/berita/2022/07/johor-sasar-kekal-pengeluar-utama-hasil-pertanian-negara-sehingga-2027/>, viewed on 5 August 2022.
- RISDA, <https://www.risda.gov.my/my/soalan-lazim>, viewed on 4 Aug 2022.
- Syahaneem Mohamad Zainalabidi & Fatimah Mohamed Arshad & Kusairi Mohd Noh, 2014. "Agricultural Policy and Institutional Reforms in Malaysia: Experiences, Impacts, and Lessons," Southeast Asian Agriculture and Development Primer Series 2nd Edition, Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), number 2014:270, October.
- Tengku Mohd Ariff Tengku Ahmad1, Suntharalingam, Chubashini2., Economic and Technology Management Review, Volume 4, 2009, Pages 1 to 10, <https://myjurnal.mohe.gov.my/public/article-view.php?Id=70339>