

## Research Article



# Malaysian Good Agricultural Practice (MyGAP): Challenges, Motivation, and Benefit of Practice by Cattle Farmers in Peninsular Malaysia

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**Abstract** | This study examines the factor determine the challenges, motivation, and benefit of practice good agricultural practices among cattle farmer in Peninsular Malaysia. The study reveals that not all small cattle farmers in Peninsular Malaysia certified with Malaysian Good Agricultural Practices (MyGAP) certificate and some still unfamiliar with that scheme. Using a data obtained from a face-to-face interview among 355 cattle farmers conducted in six state of Peninsular Malaysia from April until October 2018, it was found that the main challenges, motivation, and benefit of practice good agricultural practices among cattle farmers in Peninsular Malaysia is lack of fund (94.1%), desire to improve the quality and health of livestock (97.2%) and reduce disease infection (90.1%), respectively. The study may inspire strategies to Department of Veterinary Services in ensuring all small farmers certified by MyGAP certificate and practice good agricultural practices.

**Keywords** | Cattle, Ruminant, Good agricultural practices, MyGAP, Food safety, Malaysia

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## INTRODUCTION

Hygiene and safe to eat is the world requirement to serve food on the table. The issue of food safety is very much on the consumers mind nowadays. A consumer wants to know how safe the food they are eating, especially in terms of hygiene. However, to practice hygiene procedure from the beginning of agricultural industry (i.e., farm level) is not an easy task. In response to the world requirement of food quality and safety, since 2003 Malaysian Good Agricultural Practices (MyGAP) were initiated in Malaysia (or formerly known as Livestock Farm Certification Scheme before 2013). It is a comprehensive approach to food-related risk management that encompasses all aspects of the supply chain, from raw materials to final products. Criteria for MyGAP certification includes ani-

mal health management, biosecurity, good infrastructure, vaccines, and medication (Ministry of Agriculture and Food Industry, 2021). This criterion is to ensure the safe production, operate in a sustainable and environmentally friendly manner, produce high-quality and safe-to-eat product (Sulaiman, 2020; Ismail, 2018). The inspection of quality is based on the Malaysian Standards Good Animal Husbandry Practice (MSGAHP) MS 2027:2006 and (or) Hazards Analysis and Critical Control Point (HACCP) MS 1480:2007.

Food safety standards have evolved globally during the 1990s, and food producers have been given additional responsibility to monitor safety of their products (Liu et al., 2019). Until 2017, only 15 cattle farms (i.e., 7 beef and 8 dairy) have been certified practiced the MyGAP. Refer-

ring to the list provided by the Department of Veterinary Services (DVS) Malaysia, most of the certified MyGAP scheme in Peninsular Malaysia are come from large scale farm and under supervise of DVS. For example, Ulu Lepar Livestock Breeding Center, Jelai Gemas Livestock Breeding Center, Bio-Valley Farm, Air Hitam Livestock Breeding Center and Holstein Milk Company in Muadzam. In this case, even though MyGAP give a huge benefit to the farmers (Mohamad and Hamzah, 2020), it seems like cattle farmers in Peninsular Malaysia either did not interest, face a problem or not aware about the existing and benefit offered by MyGAP.

Previous studies have demonstrated that knowledge is the main challenges to practice food safety, including less understanding about food safety program (Liu et al., 2019; Karaman et al., 2012). Followed by financial issue, either lack of fund or considered expensive (Karaman et al., 2012; Tomasevic et al., 2013; Escanciano & Santos-Vijande, 2014), and a longer process for installation of food safety (Henson et al., 1999). Banzon et al. (2013) points out the evidence, numerous constraints to good agricultural practice (GAP) adoption but the major ones were categories in four: (i) knowledge, (ii) cost, (iii) process, and (iv) reward/incentive. The adoption is considered slow as the awareness of GAP among various stakeholders is still low.

In addition, several lines of evidence suggest that, the main difficulties in practice food safety is related to staffing (Maldonado et al., 2005). While, investment in new equipment, civil work, time for staff to document the system and personal training were listed as the cost related to the installation of food safety control measures (Henson et al., 1999; Maldonado et al., 2005; Tomasevic et al., 2013). In spite of the business runner faced difficulties in installing and practice food safety, factor such as existing of demand by consumer on hygiene product was motivate owner of the farm (or firm) to install and practice food safety in their business (Khatri & Collins, 2007). Based on Baines (1998), quality assurance of food is comprised of three key elements: (i) managing hygiene to ensure food safety, (ii) ensuring quality through grading and other measurements, and (iii) providing mechanisms for product recalls. Thus, all these elements are important to practice good agriculture practice.

Due to this motivation, previous study agreed that food safety can give benefit either to producer, customer, workers, and product itself. In the context of product, by practice food safety is capable to reduce the rejection of product by customer, reduce product specific problem, improved the quality and hygiene of product, and reduce microbial count (Khatri & Collins, 2007; Tsola et al., 2008; Karaman et al., 2012; Tomasevic et al., 2013; Maldonado-Siman et

al., 2014; Tomasevic et al., 2016). In essence, these benefits are capable to reduce economic loss due to the recalls of product in the market.

Since food safety is essential part to ensure the hygiene of product, it become a catalyst to producer in exploit the market either locally or internationally (Maldonado et al., 2005; Khatri & Collins, 2007; Maldonado-Siman et al., 2014) apart of improve the compliance of firm on legal issues (Karaman et al., 2012). Furthermore, as the consumer are conscious on the health risk and beware with the food they taking daily, food safety capable to convince the consumer to purchase their product regularly a part of attracting new customer (Henson et al., 1999). As point out by Owusu-Sekyere, Owusu and Jordaan (2014), consumer are willing to pay more in order to ensure they obtain high quality of product which free from any contaminant. While, enhancing the discipline of staff in food processing (Tomasevic, 2013) is benefit created by food safety control measure to worker.

However, there are no studies that author is aware on challenges, motivation, and benefit in practicing good agricultural practices in Peninsular Malaysia. Sequel to the aforementioned, this paper aims to examine the factor determine challenges, motivation and benefit of practice MyGAP among small cattle farmer in Peninsular Malaysia. By exploring on challenges, motivation, and benefit in implementing MyGAP, the paper provides an empirical contribution to the adoption literature and provides sufficient proof to DVS Malaysia to facilitate in practicing good agricultural practices in Peninsular Malaysia.

## MATERIAL AND METHODS

### DESIGN OF THE SURVEY

The survey included four sections: background of the farmers, information on livestock and farm, and a section on a good farming practices and MyGAP certification, which section four include questions on challenges, motivation, and benefit, of practice good agricultural practices. The questions were adapted according to previous research (Karaman et al., 2012; Henson et al., 1999; Maldonado-Siman et al., 2014; Tomasevic et al., 2016). Farmer's knowledge about good agricultural practices and whether possess the certificate, are based on nominal scale (Yes/No). Farmer's challenges, motivation and benefit on good agricultural practices were measured on a 5- point Likert scale (1-strongly disagree; 5-strongly agree). The questionnaire was designed, checked, and approved by an expert in agricultural economics.

### DATA COLLECTION

The population sample consist of the cattle farmer se-

lected by random sampling, included cattle farmer with and without MyGAP certification. To avoid violation of research ethics, the survey only conducted in six states of Peninsular Malaysia (Kelantan, Pahang, Selangor, Melaka, Negeri Sembilan and Johor) which is based on the approval letter from state of DVS Malaysia. Despite of state of DVS Malaysia provide a large list of numbers of cattle farmers (i.e., more than 15,000 in 6 states), however due to the limitation in conducting the research, only selected cattle farmer was shortlisted. The selection is based on few criteria, such as easy to reach based on location and distance, contacted, and number of cattle reared. Most of the cattle are reared in the rural area, estate or integrated with cultivation crop (e.g., oil palm or rubber tree) which it is not reachable for researcher. After considering these criteria, about 4,000 were shortlisted. Referring to sampling table by Krejcie and Morgan (1970), the sample size for this study is 351 sample, taken from the population 4,000. The questionnaire was distributed to all cattle farmers between April until October 2018 and the face-to-face interview were conducted by trained enumerator. However, before the real survey conducted, the questionnaire was pre-tested among 40 respondents for initial check of validity and reliability. After pre-testing, a few minor modifications and reverse code were made to the questionnaire.

**STATISTICAL ANALYSIS**

By using descriptive analysis, the obtained data then analyzed using IBM-SPSS software (version 22). The frequency score and percentage were calculated to determine the association challenges, motivation, and benefit of practice MyGAP by cattle farmer in Peninsular Malaysia. Descriptive analysis is chosen as it capable to simplify the large data for better displayed and read. As a proven, this approach also applied in viewed student attitude on recycling (Purwanto et al., 2020) and identify causes of fatalities in Malaysian construction (Halim et al., 2020).

**RESULT AND DISCUSSION**

**DESCRIPTIVE STATISTICS**

The demographic profile of the 355 respondent is presented in Table 1. As shown in Table 1, 20 females and 335 males, considered both genders well represented and the number of female farmers is less compared to male. This may occur due to this type of job required energy and a lot of time on grazing field apart of responsibility male as breadwinner. By comparing between age, gender, race/religion, marital status, experience, education and monthly household income, on the average, the result show that most of the respondents are come from the elder group (between age 46 to 65), male (335 respondents), Malay Muslim (354 respondents) and married (303 respondents). Due to the cattle are rearing in village within small scale

and it can be rearing by anyone, make most of the respondent (164 respondents) have less than 10 years of experience in rearing the cattle, less attain formal education (only 10 respondents had degree) and majority of respondents had income less and equal to MYR2,000 (333 respondents).

**Table 1: Demography of respondents**

Variables	Items of variable	Number of respondents
Age	≤ 25	10
	26 – 35	47
	36 – 45	67
	46 – 55	91
	56 – 65	93
	66 ≥	47
Gender	Male	335
	Female	20
Race/ Religion	Malay/ Muslim	354
	Non-Malay/ Non-Muslim	1
Marital status	Married	303
	Single	36
	Divorce/ widow	16
Experience (year)	≤ 10	164
	11-20	96
	21-30	41
	31-40	35
	≥ 41	19
Education (year)*	Not attend	33
	UPSR	64
	PMR	84
	SPM	144
	STPM/ Diploma	20
	Degree	10
Monthly household income (MYR)	≤ 1000	172
	1001 - 2000	161
	2001 - 3000	11
	3001 - 4000	4
	4001 - 5000	4
	≥ 5000	3

\* Primary School Achievement Test (UPSR); Lower Secondary Assessment (PMR); Malaysian Certificate of Education (SPM); Malaysian Higher School Certificate (STPM)  
n = 355

**CHALLENGES, MOTIVATION AND BENEFIT OF PRACTICE MYGAP**

Table 2 shows the summary for respondents' status as regards of awareness on existence MyGAP. Out of 355 respondents interviewed, 6 (1.7%) are certified having

MyGAP certificate, 9 (2.5%) follow MyGAP but not yet certified and 118 (33.2%) have the knowledge about MyGAP. Despite of existence of small percentage of farmer certified and follow MyGAP (i.e., 4.2% out of 133 respondents), this does not mean other cattle farmers did not gain benefit from the MyGAP. This may arise due to the strict requirement of MyGAP criteria to be fulfill. For example, farm management, biosecurity procedure, medications uses and many more. While 222 (62.5%) do not have any knowledge about the MyGAP. This situation can be related with the educational level among respondents which only 17.74% further the study up to pre-university and above (i.e., STPM/diploma and above). According to Jiang and Yir-Hueih (2018) household's adoption of the traceability certification is significantly related to level of education. In these case, education able to improve and increase the literacy of farmer towards information technology (I.T.). Based on Vipham et al. (2020), many value-chain players had inadequate hygiene procedurs and lack of general knowledge in terms of food safety in which it give a rise to high burden of foodborne disease around the world. Therefore, with adeque education and technology information farmers will have tendency to apply MyGAP certificate.

**Table 2:** Group of respondents

MyGAP status	n (%)
Certified having MyGAP certificate	6 (1.7)
Follow the MyGAP procedure but do not certified having certificate	9 (2.5)
Have knowledge about MyGAP	118 (33.2)
Do not have any knowledge about the MyGAP scheme	222 (62.5)

Note: n = 355

Table 3, Table 4, and Table 5 summarizes the perception of cattle farmers in Peninsular Malaysia towards challenges, motivations and benefit of practice MyGAP. However, since the huge number of farmers do not have any knowledge about MyGAP, the farmers were interpreted and clarified about the MyGAP before the question asked. This approach has been used to minimize farmers' misunderstanding of MyGAP and to increase farmers' willingness to answer this question properly.

It is apparent from Table 3, based on the farmers perception, lack of fund (94.1%) was identified as the main challenges adopting MyGAP among the cattle farmers in Peninsular Malaysia. This results supports evidence from previous study (Hoffmann et al., 2019; Tomasevic et al., 2013; Maldonado-Siman et al., 2014). The other challenges including lack of information (92.7%), no skilled worker (87.6%), difficulties of documentation by government (69.8%), reduce the flexibility to produce other products

(68.4%), reduce the flexibility of workers (68.2%), and reduce the worker time for other job (64.2%). This study supports evidence from previous observations (e.g. Banzon et al., 2013), difficulties to applied for certification which it required farmers to obtain new skills and competencies, not only to adopt new standards in production and processing operations, but also to manage and plan their activities. Besides, Mwambi et al. (2020) and Hoffmann et al. (2019) also support the decision of lack of knowledge and low incentives is a major challenges in developing countries in improving food safety.

As can be seen from Table 4, the main motivation for cattle farmers' practice of MyGAP is the desire to improve the quality and health of livestock (97.2%). Other motivation includes the demand of consumer for quality product (94.7%), and the desire to improve the company image (91.9%). In addition, other reasons include to facilitate the product entering the market (87.4%), reduce production cost (86.7%), market strategy (83.6%) and enforcement by the government (61.4%).

Despite that the cattle farmers face a variety of obstacles; it is fascinating to note that this does not reduce their motivation to practice MyGAP. In addition, as the food safety becomes a tool to increase the quality of product and compliance to the legislation issue (Karaman et al., 2012), it is important for cattle farmers to practice MyGAP as a food safety control.

Among 355 respondents, 32 claims that they did not received any benefit from the MyGAP. This may exist due to misunderstanding among cattle farmer about direct and indirect benefit they will get from existence of MyGAP. As such, these 32 respondents did not answer completely for this part in questionnaire. Thus, only 323 claim they may benefit from MyGAP. From the list in Table 5, the main benefit cattle farmers obtained from MyGAP includes: reduce disease infection (90.1%) and increase the ability to attract new customer (87.3%). These main benefits are parallel to the findings of Maldonado et al. (2005) in their study on the implementation HACCP in the Mexican meat industry.

The other benefits are: increase yield of farm (86.2%), increase the ability of product to enter the market (85.4%), increase product life expectancy (84.5%), increase the ability to retain old customer (84.5%), increase the price (81.1%), increase the benefit in market (80.9%), increase the quality of product (78.9%), reduce customer complain (78.3%), increase employee discipline (77.8%), reduce waste of product (75.8%), reduce production cost (73.0%), improve company image (72.1%) and increase compliance with legal issues (63.0%). As point out by Martino et al. (2019), allocation of decision right among the partners sig

**Table 3:** Challenges to practice MyGAP by cattle farmers

Challenges	n (%)				
	Strongly disagree	Disagree	Not Sure	Agree	Strongly agree
Lack of fund	5 (1.4)	1 (0.3)	15 (4.2)	124 (34.9)	210 (59.2)
Lack of information regarding MyGAP	4 (1.1)	2 (0.6)	20 (5.6)	165 (46.5)	164 (46.2)
No skilled/trained worker	3 (0.8)	4 (1.1)	37 (10.4)	178 (50.1)	133 (37.5)
Difficulties to obtain approval from government	4 (1.1)	6 (1.7)	97 (27.3)	146 (41.1)	102 (28.7)
Reduce the flexibility of worker	4 (1.1)	7 (2.0)	102 (28.7)	148 (41.7)	94 (26.5)
Reduce the worker time for other job	4 (1.1)	9 (2.5)	114 (32.1)	141 (39.7)	87 (24.5)
Reduce the flexibility to produce other product	3 (0.8)	6 (1.7)	103 (29.0)	162 (45.6)	81 (22.8)

Note: n = 355

**Table 4:** Motivation of cattle farmers to practice MyGAP

Motivation	n (%)				
	Strongly disagree	Disagree	Not Sure	Agree	Strongly agree
Demand for quality product from the customer	0	1 (0.3)	18 (5.1)	127 (35.8)	209 (58.9)
Desire to improve the quality and health of livestock	0	0	10 (2.8)	141 (39.7)	204 (57.5)
Desire to improve the company image	0	1 (0.3)	28 (7.9)	154 (43.4)	172 (48.5)
Order from the government	4 (1.1)	9 (2.5)	124 (34.9)	156 (43.9)	62 (17.5)
Facilitate the product entering the market	2 (0.6)	0	43 (12.1)	150 (42.3)	160 (45.1)
Market strategy	0	1 (0.3)	57 (16.1)	145 (40.8)	152 (42.8)
Reduce the production cost	1 (0.3)	1 (0.3)	45 (12.7)	173 (48.7)	135 (38.0)

Note: n = 355

**Table 5:** Benefits of practice MyGAP to cattle farm

Benefit	n (%)				
	Strongly disagree	Disagree	Not Sure	Agree	Strongly agree
Reduces disease infection	0	0	3 (0.8)	96 (27.0)	224 (63.1)
Increase the ability to attract new customer	0	0	13 (3.7)	123 (34.6)	187 (52.7)

Increase the ability of product to enter the market	0	0	20 (5.6)	122 (34.4)	181 (51.0)
Increase product life expectancy	0	0	23 (6.5)	125 (35.2)	175 (49.3)
Increase the yield of farm	0	1 (0.3)	16 (4.5)	131 (36.9)	175 (49.3)
Increase the ability to retain old customers	0	0	23 (6.5)	117 (33.0)	183 (51.5)
Increase price of product	1 (0.3)	1 (0.3)	33 (9.3)	126 (35.5)	162 (45.6)
Reduce production cost	0	3 (0.8)	61 (17.2)	131 (36.9)	128 (36.1)
Increase compliance with legal issues	0	2 (0.6)	97 (27.3)	112 (31.5)	112 (31.5)
Increase quality of product	0	1 (0.3)	41 (11.5)	114 (32.1)	166 (46.8)
Reduce customer complain	0	2 (0.6)	43 (12.1)	146 (41.1)	132 (37.2)
Increase employee discipline	0	0	47 (13.2)	159 (44.8)	117 (33.0)
Improve the company image	0	0	67 (18.9)	156 (43.9)	100 (28.2)
Reduce the waste of product	0	0	54 (15.2)	149 (42.0)	120 (33.8)
Increase the benefit in market	0	1 (0.3)	35 (9.9)	144 (40.6)	143 (40.3)

Note: n = 323

nificantly influence investment decision and it appears to be the organisational response of private and public agents. On the other hand, higher frequency of quality checks can improve the situation of consumers apart of being and effective way in punishing the dishonest retailers without harming the honest ones (Polivka and Martinčík, 2014). Thus it show that farmer believed by applying MyGAP will benefit them in many ways as listed in Table 5.

## CONCLUSION AND RECOMMENDATION

The finding of this study showed that the main challenges in practicing good agricultural practices among cattle farmers is lack of fund (94.1%). This may occur due to most of the cattle farmers surveyed are from smallholder group. The desire to improve the quality and health of livestock (97.2%) has become the key incentive for farmers to follow good agricultural practices, as smallholder farmers contribute a large amount of local meat and directly engage with Malaysian consumers. In fact, this study showing that by practice good agricultural practices, farmers agree that this MyGAP practices capable to reduce disease infection (90.1%). To the best of researcher's knowledge, this study is the first conducted an assessment on the challenges, motivation, and benefit to practice good agricultural practices

(i.e., MyGAP) among small cattle farmers in Peninsular Malaysia.

Based on the presented result, it is recommended that all parties in the cattle industry take actions in improving the quality and sustainability of local beef. To the farmer, as the MyGAP give huge benefit in improving the quality and health of cattle, it is vital to them to adapt the procedure in rearing the cattle. Despite they do not able to fully install all the equipment required due to the high cost, they may follow partially. As the government targeting to increase the competitiveness of local cattle industry, this finding may also be useful for the policy and related authorities in promoting MyGAP. This effort may attract and encourage more cattle farmers to adopt MyGAP procedure in their farm apart of reducing the gaps between big and small cattle farmers or rural and urban area.

There are a few restraints facing by researcher throughout the completion of this study such as time constrain, lack of budget and transportation cost, and it is hopes that in future more respondent will be involved in study, especially in the rural area. By doing so, the result may be more interesting to be reported as they may less expose with the information regarding MyGAP and may be inspiration to

DVS in ensuring all small cattle farmers adopt a MyGAP procedure. Besides, following a trend toward greater industrialization of agricultural production in Malaysia, it is recommended that in future researcher can extend the research by looking at producer's willingness to contribute in adopting MyGAP procedure and consumer's preferences and behavior when purchase local meat.

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## CONFLICT OF INTEREST

No conflict of interest

## AUTHORS CONTRIBUTION

Muhammmad A collected the data, carried out the implementation and performed the calculations. Muhammad A, Shaari NF and Ghazali MH gathered and having input from the experimental development, reviewed and discussed the results of the study. Muhammad A and Shaari NF performed the overall grammar check based on the narrative and its amendment throughout the text content.

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