

AN ASSESSMENT OF THE IMPACT OF TECHNOLOGY ON JOSAPINE PINEAPPLE GROWN IN MALAYSIA

**Mohd Johaary Abdul Hamid and Abu Kasim Ali
Economics and Technology Management Research Centre, MARDI**

ABSTRACT

The assessment of the impact of technology on Josapine pineapple grown in Malaysia was conducted using a structured questionnaire involving 105 respondents. Generally, the Josapine variety had met the needs of the farmers where a majority (92%) of the respondents expressed satisfaction with its performance, while 82.7% stated that it was better than other pineapple varieties. A majority of the farmers (72.4%) started planting this variety between the year 2001 and 2002. The success of earlier farmers in securing a higher market price for Josapine had encouraged others to plant this variety. Among the strengths of Josapine are their sweeter tastes, marketability, relatively higher price, as well as the hardiness of the fruit and the planting materials. The period of planting is also shorter than other pineapple varieties. On the other hand, its weaknesses include the high cost of planting materials which are not easily available, and its susceptibility to bacteria heart rot (BHR). There is also the need for more intensive crop care and maintenance. Taking into consideration its strengths and weaknesses, the strategies to enhance the production of Josapine pineapple has been proposed. These include planting Josapine in mineral soil, improvement in the delivery system and the supply of planting materials, and the enhancement of mechanization and automation to reduce the cost of production.

Key word: Josapine pineapple variety, farmers.

INTRODUCTION

The world tropical fruit production in 2001 was 62 million metric tonnes. This comprised almost 22.1% or 13.74 million metric tonnes of pineapple. Pineapple is therefore the second highest tropical fruit production after mango which makes up 25.1 million metric tonnes. In terms of capability, weather and soils, pineapple production in Malaysia is quite small when compared to that of other countries with similar weather such as Thailand and the Philippines. With 448,193 metric tonnes or 3.3% of the world pineapple production, Malaysia actually has the capability to enhance its production and can be a main player in world pineapple production in the future (FAMA 2004).

Based on its potential economics and commercial value, pineapple has been identified as one of the priority commodities to be developed for the domestic and international markets in The Third of National Agriculture Policy – NAP 3 (Samah Hasan, 2004). Planted area of pineapple had increased from 5,400 hectares in 2001 to 15,100 hectares in 2005. This trend indicates the nation's efforts and commitment to develop the pineapple industry as one of the major crops as stipulated in the plan was pursued accordingly.

Pineapple had been grown for fresh consumption, canning or juicing in Malaysia (Mohammed Selamat, 1996). The Malaysian Pineapple Industrial Board (MPIB) estimated that there were 2,016 pineapple growers in the country in

2005, where majorities were located in the state of Johore. According to Chan Y. K., (1995), in the 60's to the early 70's, Malaysia had been one of the top three producers of pineapple in the world. However, due to a gradual declining production, the Malaysian pineapple ranking stood at the ninth and tenth position for the production and its export to the world market, respectively (FAO report (2002). The decrease of Malaysian pineapple production was due to it being replaced by oil palm oil and rubber crops which could bring in higher net income to growers. Currently, the major pineapple producing countries are Thailand, the Philippine and Brazil.

Malaysian pineapple varieties include Mauritius (Moris), Sarawak, Gandol (N19), N36, Josapine and Maspine. Moris, Sarawak and Josapine basically had been grown for fresh consumption, while Gandol was for canning and juicing. The varieties N36 and Maspine were grown for both fresh consumption and canning purposes. JOSAPINE is an acronym for the hybrid of the 'JOhor' (Spanish) and 'Sarawak' (Cayenne) 'PINEapple'. This variety had been introduced a decade ago by MARDI researchers and it had been commercialized successfully. The farmers have generally been growing Josapine pineapple on peat soils. Since it had been introduced and grown by farmers for almost ten years, it is imperative that an assessment of the impact of technology on Josapine pineapple be carried out in order to collect information and feed back from technology users to be used by researchers for further improvement of the variety.

The assessment would (i) evaluate the performance of the Josapine pineapple grown by the farmers; (ii) measure the acceptance of the Josapine pineapple (technology) by the farmers; (iii) collect information and feedback on the strengths and weaknesses of the Josapine pineapple; and (iv) recommend strategies to enhance the production of Josapine pineapple for the benefit of the farmers.

METHODOLOGY

Information about the growers was obtained from MARDI state officers, the Department of Agriculture (DOA), the Malaysian Pineapple Industrial Board (MPIB) and from farmers' friends and neighbors who were also planting Josapine pineapple (snowballing technique). A survey of 105 Josapine growers sampled randomly, were carried out using a structured questionnaire. The questionnaire was divided into five sections, namely, the respondent profile; the technology profile; the understanding of the technology; the assessment of the technology; and finally, the farm profile. The definition of 'technology' in this study refers to the Josapine variety only and not on the utilization of whole Josapine production technology package.

The evaluation on the performance of Josapine was measured by interviewing the farmers using a satisfaction scale. Farmers' willingness to plant

the variety in the future or planning to replace it with other crops was used as performance measure. In order to capture the strengths and weaknesses of the variety, Josapine pineapple characteristics were compared and evaluated against other pineapple varieties

RESULTS AND DISCUSSIONS

The average age of the farmers was 50 years. Almost all of the farmers sampled (97%) were Malays, while Chinese respondents made up 3%. The average Chinese farm, which was about 10 hectares, was bigger than those run by the Malays which came to about 3.4 hectares. A majority of the farmers had planted Josapine pineapple as a full time job (79.2%). Academically, a majority of the respondents finished their education at the primary and secondary school levels, while those who did not go to school made up 2.9%. Only 1.0% were certificate/diploma holders. The farmers with income below RM1, 500 made up 77.7% of the respondents, with 14.9% of them having an income of between RM1, 501 to RM2, 000. About 7.4% of the farmers had an income of more than RM2, 001. The capital to run their Josapine pineapple plantation was mostly obtained from the bank with 95.2% falling under this category.

Josapine Pineapple Performance

A majority of the respondents (90.5%) were still planting the Josapine variety while 9.5% had ceased operation practice or had yet to start using it (Table 1). Majority of the farmers (92.4%) were satisfied with the performance of the variety, whilst the rest had found it otherwise. In comparison with other varieties, 82.7% of the farmers were of the opinion that Josapine pineapple was better. Only 7.7% had stated that the variety was not good enough. Generally, Josapine with its unique characteristics was more acceptable as a better variety when compared to others. The finding revealed that 86.2% of the respondents were willing to plant it in the future with 11.4% not being sure of doing this, while only 1.9% wanted to quit its planting. These results signify that farmers regard the performance of Josapine pineapple as relatively good and with proper promotion it can be a leading pineapple variety for fresh consumption.

Table 1: Performance of Josapine

Variable	Yes (%)	No(%)
Still planting (in operation)	90.5	9.5
Satisfied with the variety	92.4	7.6
Generally better than other variety	82.7	17.3
Willing or plan to plant in the future	86.2	13.8

Acceptance of the Josapine Pineapple

The acceptance of Josapine variety by farmers was measured by the number of years they had known about the variety and the time they started to plant it. Generally the farmers had known about the Josapine pineapple through the mass media, government departments/agencies and through their friends. Table 2 showed the respondents' awareness of Josapine and when they started to plant the variety.

Table 2: Awareness about Josapine pineapple and time of planting

Year	Start to know		Start to plant	
	%	Cumulative	%	Cumulative
1996 - 1998	4.8	4.8	2.9	2.9
1999 - 2000	49.5	54.3	23.8	26.7
2001 - 2002	44.8	99.0	72.4	99.0
2003	1.0	100.0	1.0	100.0

Results indicated that even though the variety had been introduced in 1996, the percentage (4.8%) of farmers who were aware of it was still low after two years. To rectify this low awareness level, more focus and efforts, especially on the effectiveness of our delivery systems, should be made. The success of earlier farmers (2.9%) in securing a high market price for the Josapine pineapple had encouraged others to plant the variety more actively. In 2002, almost all of the farmers (99.0%) had grown the Josapine pineapple.

Strengths and Weaknesses of Josapine Pineapple Utilization

The perception of farmers on Josapine pineapple, as compared to other varieties, was determined by several statements pertaining to its strengths and weaknesses to which they were agreeable to or otherwise. These had been shown in Tables 3 and 4.

Table 3: Strengths of the Josapine Pineapple.

Item	Strengths	Response (%)
1.	Tastes sweeter	99.1
2.	Marketable / high demand	89.4
3.	Higher market price	83.8
4.	Fruits not easily damaged	83.8
5.	Planting materials not easily damaged	81.7
6.	Bring in high net income	76.8
7.	Gestation period is shorter	69.5
8.	High yielding	51.4

Based on the response of farmers it was clear that Josapine pineapple had a lot of advantages over the other varieties. The main strength for this variety was that it tasted sweeter (99.1%). Besides this, the respondents suggested that the fruits were marketable and in high demand (89.4%). Additionally, higher market price had also encouraged more farmers to plant the variety. Other Josapine strengths were that the fruits and the planting material were not easily damaged (83.8% and 81.7%, respectively). High net income (76.8%), a shorter gestation period when compared to other pineapple varieties (69.5%), and high yield (51.4%) made up the rest of the agreeable perceptions of the farmers.

The respondents had also admitted that Josapine pineapple did have its weaknesses too (Table 4).

Table 4: The Weaknesses of Josapine Pineapple

Item	Weaknesses	Response (%)
1.	Difficulty in getting planting materials	76.2
2.	Susceptible to Bacteria Heart Rot (BHR) disease	70.2
3.	High cost of planting materials	54.8
4.	The need for more intensive crop care and maintenance	54.3

Top of the list for the weaknesses of the Josapine pineapple was that its planting materials were not easily available (76.2%). Other weaknesses included the susceptibility of the variety to bacteria heart rot (BHR) disease (70.2%), the high cost of planting materials (54.8%), and the need for more intensive crop care and maintenance (54.29%).

CONCLUSION

The assessment of the impact of technology on the Josapine pineapple grown in Malaysia gave a strong indication that it had been accepted by most of the farmers. A majority of the respondents is still planting the variety and they are satisfied of its performance and are also willing to grow it in the future.

The main weaknesses of the variety had been identified to be the difficulty in getting the planting materials, its high cost, and its non-resistance to the bacteria heart rot (BHR) disease. In this respect, related agencies should improve the system supplying the planting materials. Meanwhile, the *Micro-plan Technology Auditing MARDI* (2003) had proposed a critical technology that would be developed to do a '*somaclonal*' or mutation on the Josapine pineapple breed to reduce the BHR disease. The reduction of the cost of planting material, effective utilization of input and the enhancement of productivity should be in place to help upgrade the capability of the farmers in handling the production of the Josapine pineapple, and hopefully, after the second cycle, they could get back the returns for their investment.

Our study has been limited on Josapine pineapple grown on peat soil. The reason for this is the limited availability of mineral soils which has been planted with the main commodities such as oil palm and rubber. Effective strategic planning is needed to encourage more production of the Josapine pineapple in Malaysia. Research on the planting of Josapine pineapple on mineral soils must be carried out because mechanization and automation are easily implemented in

this land area which is more suited for heavy infrastructure or technologies. Additionally, through mechanization, commercial viability of Josapine pineapple can be improved and the fresh consumption market must be developed not only for the domestic market but also for export. Josapine pineapple has unique characteristics which if strategically promoted has the potential to be successful in the export market.

REFERENCES

- Chan, Y.K. (1995). Performance and Stability of Pineapple Hybrids in GxE Trials in Malaysia. In: Proceedings of the 2nd Symposium International Ananas, 20-24 February 1995. Martinique, French West Indies. Acta Horticulturae 425: 201-211
- Chan, Y.K. and Lee, H.K. (1996). 'Josapine': A New Pineapple Hybrid Developed at MARDI. In: Proceedings of the 2nd National Congress on Genetics (Mohamad, O., Mahani, M.C and Zulkeflie, Z.ed) pp 217-220, Kuala Lumpur, Malaysia
- FAMA (2004). *Analisis Industri Buah Nanas Negara*. Kuala Lumpur: Lembaga Pemasaran Pertanian Persekutuan (FAMA)
- Haron A. Rahim (1999). *Potensi Pasaran Nanas, cetakan pertama*. Kuala Lumpur : Lembaga Pemasaran dan Pertanian Persekutuan (FAMA)
- MARDI (2000) *Anggaran Kos Pengeluaran dan Pendapatan Tanaman dan Ternakan*. Serdang: Institut Penyelidikan dan Kemajuan Pertanian Malaysia (MARDI)
- M. Mohammed Selamat (1996). *Penanaman Nanas – Nanas Makan Segar dan Nanas Kaleng*, cetakan pertama. Serdang : Institut Penyelidikan dan Kemajuan Pertanian Malaysia (MARDI)
- Samah Hasan (2004) : *Analisis Industri Buah Nanas*, Lembaga Pemasaran Pertanian Persekutuan (FAMA), Cetakan Pertama