

EFFECT OF MOTIVATION AND PERCEPTION OF FARMERS RESPONSE TO SUGAR CANE MANAGEMENT CONSOLIDATION PROGRAM PLAN

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ABSTRACT

This study aimed to analyze (1) the difference levels of motivation, perception and behavioral responses of sugar cane farmers with irrigated land and rainfed land to the cane grower management consolidation plan, and (2) the effect of motivation and perception on farmers' behavioral responses related to the cane grower management consolidation plan. The research location was in the sugar factories of PT Perkebunan Nusantara XI. The samples consisting of sugar cane farmers with irrigated land and rainfed land who were randomly selected, amounting to 242 respondents. The novelty of research emphasized on the object and analytical methods. The difference levels of motivation, perceptions, and behavioral responses of farmers with irrigated land and rainfed land were analyzed by independent sample t-test. The influence of perception and motivation on the behavioral response of farmers to the cane grower management consolidation plan was analyzed by multiple linear regression. The results showed that, there were differences between farmers with irrigated land and rainfed land. Meanwhile, in terms of the response of farmers, there was no significant difference between irrigated land and rainfed land. The influence of motivation, perception, education, dummy variables of Purwodadi and Pradjekan sugar factories significantly influenced farmers' behavioral responses to the cane grower management consolidation plan. To improve the behavioral response of farmers, it is necessary to provide supervision regarding the management of cane grower and the benefits that farmers will obtain from the program to make farmers interested in understanding the objectives of the program.

Keywords: Behavior; Management consolidation program; Motivation; Perception; Sugar cane

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INTRODUCTION

The plan to consolidate sugar cane agricultural land is not easy to do because of the difficulty related to

physical land integration due to narrow ownership boundaries and continued fragmentation. PT Perkebunan Nusantara (PTPN) XI has sought to

increase the production of sugar and sugar cane, through the provision of new lands and revitalization of sugar factories to be more efficient, thus being able to produce more sugar. However, because land consolidation is difficult to do and does not get a positive response from farmers, PTPN XI has made an alternative plan, namely consolidation program for the management of cane grower. Cane grower management consolidation is carried out to optimize the role of farmers, sugar mills, banks, fertilizer companies, and sugar cane farmer cooperatives in the management of cane grower.

According to Irham (2018), the consolidation of cane grower management aims to ensure the availability of quality and timely seeds, ensure land management systems that meet the standards, ensure the availability and use of fertilizers that are timely and appropriate, ensure the time of cutting and felling methods that meet the standards, and guarantee sugar cane transportation from the location of the land to the mill. Sugar cane is cultivated in different types / types of land, namely irrigated land and rainfed land, which have different agronomic growth characteristics of sugar cane. Irrigated land will relatively have better growth characteristics than rainfed sugar cane land. Limited land resources (environment) cause sugar cane cultivation to be carried out with good procedures by adjusting to the environment (Ardiyansyah & Purwono, 2015).

The successful introduction of the consolidated sugar cane management program is largely

determined by farmers' perceptions and their motivation to participate in the program. Perception can be seen as a process of gathering, selecting, organizing, and interpreting information. The process starts from receiving information from various senses, followed by analyzing it to give meaning. Everything that affects someone's perception will also influence the behavior chosen (Indrawijaya, 2010). A person's good perception of something will cause that person to give a high response to it.

As it is known, motivation is a condition in a person that encourages individual desires for certain activities to achieve goals (Handoko, 2003). In this research, motivation was an encouragement to farmers to participate in the consolidation plan of cane grower management. In motivation theory, the ERG theory developed by Clay Alderfer mentions that there are three types of motivation, namely existence, relatedness and growth. In this research, motivation was measured by relatedness and growth; in fact, sugar cane farmers had long been in the sugar cane business so the motivation for existence did not become a benchmark because the sugar cane farmers believed that the sugar cane farming will continue for a long time.

Several studies about factors that influence farmers' responses have been carried out in several cases in agriculture. However, studies about factors that influence farmers' responses to sugar cane management consolidation program plan were never existed. That is because sugar cane consolidation is a new program planned

by PTPN XI. In addition, this study took a sample of the sugar factory that represents all clusters and compared the influencing factors based on the type of agricultural land.

Other novelty in this research is that there are object of research and analytical methods comparing the motivation, perceptions, and responses of farmers to program plans based on the type of agricultural land. Similar research has been done only analyzed motivation, perception, and response to one type of agricultural land. Irsa et al. (2018) and Rukka & Wahab (2013) analyzed the motivation of farmers to an agricultural program in several types of land, namely irrigated land in the form of percentages. Adam (2016) analyzed farmers' perceptions of agricultural programs in the form of percentages. Research on farmers' responses to the program to be implemented about agriculture by Siregar (2017) also measure in the form of categorized percentages.

In the previous research, farmers behavior responses to socialization, program plans and innovation in agriculture were influenced by perception and motivation variables (Wijayanti et al., 2016), education (Novia, 2011; Rozalina & Tusiah, 2015), and farmers age (Eddy et al., 2012). Type of agricultural land affects the response of farmers in crop management. From the results of sugar cane research in East Java Province, productivity average of sugar cane in irrigated land was higher than in rainfed land. Sugar cane farming applying ratoon management in irrigated land

was more profitable than in rainfed land (Widyawati, 2018).

Each sugar factory has different policies related to compensation, accommodation, payment for sugar cane harvest, selling prices, production standards, and quality seeds provided, thus causing different satisfaction for each farmer and influencing the behavior of farmers in crop management (Ekawati, 2013). The existence of a new program plan would certainly result in various farmers' perceptions related to the program. In addition to perception, there is hope that there will be a motivation (encouragement) in accepting the program plan. Psychological factors such as motivation, perception and attitude are the main determinants of decision making (Gunawan, 2015). Perception and motivation are important in determining the behavioral response of farmers as the main actors when the program plan is implemented. Diverse responses from farmers will determine whether the plan to consolidate the management of cane grower will be carried out or not.

There were some farmers not joining the membership of the sugar cane cooperative because they perceived that the performance of the sugar cane cooperative was not impactful, so joining the sugar cane cooperative did not have a positive influence on their sugar cane farming. The performance of cooperatives considered as unsatisfactory by farmers has impacted farmers also doubts the ability and performance of sugar cane factories in managing sugar cane in sugar cane consolidation program.

Based on the aforementioned description, this study aims to analyze (1) the difference levels of motivation, perception and behavioral responses of sugar cane farmers with irrigated land and rainfed land to the consolidation plan of the cane grower management, and (2) the effect of motivation and perception on farmers' behavioral responses related to the consolidation plan of cane grower management.

METHODS

Data Collection

Purposive sampling method was used in the research. A survey on sugar factory was conducted followed by holding socialization about the consolidation plan of cane grower management in PTPN XI. The survey was done in 6 selected sugar factories representing 14 sugar factories managed by PTPN XI, with samples represented by two sugar factories per cluster namely Pagottan and Purwodadi Sugar Factories (western cluster), Jatiroto and Semboro Sugar Factories (middle cluster) and Asembagus and Prajekan Sugar Factories (eastern cluster). The samples of sugar cane farmers with irrigated land and rainfed land were randomly selected, amounting to 242 respondents (108 irrigated land farmers and 134 rainfed farmers). With the details of the respondents in each cluster were 82 farmers (43 irrigated land farmers and 39 rainfed farmers) from western cluster, 80 farmers (40 irrigated land farmers and 40 rainfed farmers) from middle cluster, and 80 farmers (25 irrigated land farmers and 55 rainfed farmers) from eastern cluster.

Measuring Motivation, Perception and Behavioral Response

Motivation and perception variables were measured using one-to-five Likert scale related to technical preparation, cultivation, harvest and economic impact of the sugar cane management consolidation program. The total score of motivation and perception of each statement item was averaged then converted into a score ratio. The score ratio was calculated from the average of the item divided by the highest score x 100%.

Behavioral response measurement using binary scale was zero to one related to the impact of the sugar cane management consolidation program on farmers' preparation, cultivation, harvesting, economic and social aspects. The total score of the behavioral responses in each statement item was averaged then converted into a score ratio. The score ratio was calculated from the average of the item divided by the highest score x 100%.

Data Analyses

To analyze the differences in motivation, perceptions, and behavioral responses of irrigated land farmers and rainfed farmers, an analysis was carried out using a t-test for the mean of two unpaired data (independent sample t test). The multiple linear regression model with the Ordinary Least Square (OLS) method was used to examine the effect of farmers' motivation and perceptions on the behavioral response of sugar cane farmers to the consolidation plan of cane grower management.

The equation model used is as follows:
$$Y = \alpha + b_1x_1 + b_2 x_2 + b_3x_3 + \dots + b_n x_n + d_1 D_1 + d_n D_n + \mu \dots \dots \dots \text{(Equation1)}$$

Note:

Y= farmers' behavioral response to the consolidation plan of sugar cane management (%)

α = constant value

$b_1, b_2, b_3 \dots b_n$ = regression coefficient

x_1 = age of farmer (years)

x_2 = farmer education (years)

x_3 = motivation (%)

x_4 = perception (%)

D1= dummy type of land (1 = irrigated land, 0 = rainfed land)

D2= dummy Djatiroto sugar factory (1 = Djatiroto sugar factory, 0 = the other sugar factories)

D3= dummy Semboro sugar factory (1 = Semboro sugar factory, 0 = the other sugar factories)

D4= dummy Pagotan sugar factory (1 = Pagotan sugar factory, 0 = the other sugar factories)

D5= dummy Purwodadi sugar factory (1 = Purwodadi sugar factory, 0 = the other sugar factories)

D6= dummy Pradjekan sugar factory (1 = Pradjekan sugar factory, 0 = the other sugar factories)

μ = error factor

To test the hypothesis, OLS (Ordinary Least Square) method was used by taking into account the adjusted R², F test and t test. Classical assumption testing was used to determine whether the estimated regression coefficient was the best unbiased estimator (Best Linear Unbiased Estimator, BLUE). The tests carried out were normality, multicollinearity, and heteroscedasticity tests.

RESULTS AND DISCUSSION

Motivation of Sugar cane Farmers with Irrigated Land and Rainfed Land to the Consolidation Plan of Sugar cane Management Program

In the ERG motivation theory developed by Clay Alderfer there are three types of motivation, namely existence, relatedness and growth (Caulton, 2012). In this research, motivation was measured by relatedness and growth. In fact, sugar cane farmers had been existed in the sugar cane business for a long period, so the motivation for existence did not become a benchmark because the sugar cane farmers believed that the farming will sustain for a long time. Relatedness is the need to establish a relationship with other individuals, while growth is the need to develop. Motivation shows the desires and needs of farmers that encourage farmers to participate in a consolidated program of managing sugar cane. Farmers' motivation in carrying out the consolidation of cane grower management can be seen in Table 1.

Rainfed land farmers had higher motivation in developing needs (growth) compared to relatedness needs. Most rainfed land farmers had a desire to have a more prosperous life as their needs developed. Innovations in agricultural techniques by farmers show a positive influence on the welfare of farmers (Tambo & Wünsch, 2017). In contrast to rainfed land farmers, irrigated land farmers had a higher value

Table 1. Farmers' motivation in carrying out the consolidation of cane grower management

| Motivation | Sugar Factories | | | | | | |
|----------------|-----------------|-----------|--------|---------|-----------|-----------|---------|
| | Asembagus | Djatiroto | Semoro | Pagotan | Purwodadi | Pradjekan | PTPN XI |
| Irrigated Land | | | | | | | |
| Relatedness | 80.25 | 79.00 | 77.75 | 78.48 | 78.00 | 90.00 | 79.21 |
| Growth | 79.86 | 76.29 | 80.29 | 81.61 | 77.00 | 93.71 | 79.76 |
| Rainfed Land | | | | | | | |
| Relatedness | 82.00 | 78.50 | 85.75 | 79.76 | 64.72 | 88.71 | 81.12 |
| Growth | 83.29 | 78.57 | 82.43 | 77.82 | 61.59 | 89.88 | 80.41 |

Source : Primary Data Analysis (2018)

of motivation related to relatedness needs than growth needs. Motivated farmers found it easy to communicate with sugar mills. The difference in motivation between farmers based on their needs is due to rice field farmers being constrained by access to seeds and capital in sugar cane management. Rainfed land farmers were more constrained by communication with sugar mills in obtaining information related to sugar cane management because the conditions in rainfed land were different from those in irrigated land so the information on sugar cane management should be different and they felt that the sugar mills were not willing to understand the problems faced by rainfed land farmers. To test the differences in the motivation of irrigated and rainfed land farmers on the consolidation plan of the cane grower management, the results of independent sample t test are presented in Table 2.

From the results of the analysis using the independent sample t test in Table 2, it is known that in Asembagus, Djatiroto, Pagotan, Pradjekan and

Semoro sugar factories there was no significant difference between the motivation of farmers who cultivated sugar cane in irrigated land and rainfed land. Reviewing the overall results of the independent sample t test, the motivation of farmers towards the consolidation plan of cane grower management at PTPN XI did not have a significant difference. Meanwhile in Purwodadi Sugar Factory, there was a significant difference between the motivation of farmers who cultivated sugar cane in irrigated land and rainfed land. The motivation of farmers with irrigated land was higher than the motivation of farmers with rainfed land.

In terms of the distribution, the rainfed-land respondents who had high motivation were only 16.7% while the irrigated-land respondents were 95%. This is because the motivation of rainfed land farmers to some consolidation programs was lower than that of irrigated land farmers. The motivation of rainfed land farmers to increase sugar cane production / productivity was related to scheduling planting time, fertilizing, and cultivation

Table 2. Results of Independent Sample t-test Farmers' Motivation to the consolidation plan of sugar cane management by Type of Agricultural Land

| Information | Sugar Factory | | | | | | |
|-----------------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|
| | Asembagus | Djatiroto | Semboro | Pagotan | Purwodadi | Pradjekan | PTPN XI |
| Irrigated Land Motivation Average | 80.05 | 77.64 | 79.02 | 80.05 | 77.50 | 91.86 | 79.49 |
| Rainfed Land Motivation Average | 82.64 | 78.54 | 84.09 | 78.79 | 63.15 | 89.29 | 80.76 |
| Irrigated Land Standard Deviation | 1.92 | 6.90 | 5.82 | 9.49 | 4.09 | 4.13 | 7.64 |
| Rainfed Land Standard Deviation | 1.79 | 9.38 | 6.84 | 8.32 | 7.38 | 6.54 | 11.02 |
| T statistic | -0.986 | -0.34 | -2.52 | 0.46 | 7.51 | 0.84 | -1.06 |
| Prob. t | 0.33 ^{ns} | 0.73 ^{ns} | 0.16 ^{ns} | 0.64 ^{ns} | 0.00 ^{***} | 0.40 ^{ns} | 0.29 ^{ns} |

Source: Primary Data Analysis (2018)

Note :

*** = significant at $\alpha = 1\%$; **= significant at $\alpha = 5\%$; *= significant at $\alpha = 10\%$;
ns = not significant

techniques as well as increasing sugar cane yield production. Some farmers were not interested in increasing sugar cane yield because they thought that the sugar cane yield on rainfed land was difficult to increase. Water availability is the biggest factor affecting the variability of sugar cane production, sugar cane growth is sensitive to water deficit (Liu et al., 2016). In addition, rainfed land farmers assumed that the planting and fertilizing time could not be scheduled by the sugar factory because farmers only adjusted to the time of rain. This is opposite to the irrigated-land farmers whose water is available throughout the year, thus the planting and fertilizing scheduling faced no problem regarding the water availability.

Perception of Irrigated-Land and Rainfed-Land Sugar cane Farmers to the Consolidation Plan of Sugar cane Management Program

Farmers' perceptions will affect farmers' responses to the existence of a consolidated program of sugar cane management. A good perception will lead to a positive response to the existence of a consolidated program of cane grower management. Different characteristics between irrigated land and rainfed land caused farmers to have different perceptions of a program. The differences in the perceptions between irrigated land and rainfed land farmers of the consolidation plan of sugar cane management in PTPN XI were tested using an independent sample t test presented in Table 3.

Based on the results of the independent sample t test of farmers' perceptions of the cane grower management consolidation plan, it is known that in Asembagus, Djatiroto, Pagotan and Pradjekan sugar factories, there was no significant difference between the perceptions of farmers who cultivated sugar cane in irrigated land and rainfed land. Meanwhile, in

Purwodadi and Semboro sugar factories differences between also in PTPN XI, there were significant

Table 3. Results of Independent Sample T Tests of Farmers' Perceptions of the Consolidation Plan for Sugar cane Management by Type of Agricultural Land

| Information | Sugar Factory | | | | | | |
|-----------------------------------|--------------------|--------------------|---------|--------------------|-----------|--------------------|---------|
| | Asembagus | Djatiroto | Semboro | Pagotan | Purwodadi | Pradjekan | PTPN XI |
| Irrigated Land Perception Average | 78.25 | 80.92 | 80.75 | 79.85 | 72.58 | 90.34 | 79.06 |
| Rainfed Land Perception Average | 82.08 | 83.00 | 84.67 | 78.81 | 60.78 | 88.97 | 81.80 |
| Irrigated Land Standard Deviation | 6.65 | 7.36 | 3.52 | 4.92 | 9.18 | 5.05 | 7.47 |
| Rainfed Land Standard Deviation | 9.82 | 7.64 | 7.75 | 4.09 | 4.13 | 9.42 | 13.19 |
| t statistic | -1.44 | -0.88 | -2.06 | 0.76 | 5.16 | 0.31 | -2.04 |
| Prob. t | 0.16 ^{ns} | 0.38 ^{ns} | 0.05* | 0.45 ^{ns} | 0.00*** | 0.75 ^{ns} | 0.04** |

Source: Primary Data Analysis (2018)

Note:

*** = significant at $\alpha = 1\%$; ** = significant at $\alpha = 5\%$; * = significant at $\alpha = 10\%$; ns = not significant

the perceptions of sugar cane farmers in irrigated land and rainfed land. Farmers in Purwodadi sugar factory, especially rainfed land farmers, were concerned with the sugar factories related to the supply of seeds. That is because rainfed land farmers were very dependent on rainy season for irrigating their land so planting sugar cane tends to adjust to the time of rain. They were worried that sugar mills could not meet their needs when the planting season arrived.

Moreover, irrigation problem is also a cause why rainfed land farmers disagreed with the schedule of planting and fertilization by the sugar factory. On the other hand, irrigated land farmers did not depend their farming on the rainy season since their water needs were fulfilled through irrigation. Rainfed land farmers generally planted sugar

cane in August because they rely on rain water, while irrigated land farmers generally planted in June. Sugar cane plants that are not watered or are in a state of water stress will result in a substantial reduction in sugar cane yield and sugar production (Alamilla-Magaña et al., 2016).

Behavioral Response of Irrigated-Land and Rainfed-Land Sugar cane Farmers to the Consolidation Plan of Sugar cane Management Program

Behavior is an action in the form of activities following the consolidation of sugar cane management by farmers after obtaining information and being able to take a positive or negative attitude. The differences in behavioral responses between farmers who cultivated sugar cane in irrigated land

and rainfed land were tested using an independent sample t test which can be seen in Table 4.

The results of the independent sample t test of farmers' behavioral

Table 4. Results of Independent Sample T Tests of Farmers' Behavioral Responses to the Consolidation Plan of Sugar Cane Management by Agricultural Land Type

| Information | Sugar Factory | | | | | | |
|-----------------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|
| | Asembagus | Djatiroto | Semboro | Pagotan | Purwodadi | Pradjekan | PTPN XI |
| Irrigated Land Responses Average | 90.00 | 95.00 | 91.43 | 90.99 | 84.28 | 84.28 | 90.08 |
| Rainfed Land Responses Average | 94.64 | 86.78 | 94.64 | 95.58 | 62.30 | 86.94 | 87.26 |
| Irrigated Land Standard Deviation | 11.91 | 6.17 | 11.95 | 12.03 | 15.13 | 7.82 | 11.95 |
| Rainfed Land Standard Deviation | 8.63 | 13.76 | 9.52 | 8.29 | 11.69 | 11.68 | 15.00 |
| t statistic | -1.41 | 2.43 | -0.94 | -1.48 | 5.04 | -0.66 | 1.63 |
| Prob. t | 0.18 ^{ns} | 0.02 ^{**} | 0.35 ^{ns} | 0.15 ^{ns} | 0.00 ^{***} | 0.53 ^{ns} | 0.11 ^{ns} |

Source: Primary Data Analysis (2018)

Note :

*** = significant at $\alpha = 1\%$; ** = significant at $\alpha = 5\%$

ns = not significant

response to the consolidation plan of cane grower management based on the type of agricultural land showed that there was no difference between the behavioral response of farmers who cultivated sugar cane in irrigated land and rainfed land in Asembagus, Pagotan, Pradjekan, and Semboro Sugar Factories also at PTPN XI. In Purwodadi and Djatiroto Sugar Factories, there were significant differences between the behavioral responses of farmers who planted sugar cane in irrigated land and rainfed land. Rainfed-land sugar cane farmers in Purwodadi Sugar Factory were not convinced that the existence of a seed consolidation program can be more easily obtained.

Based on the information obtained in the field, these farmers doubted the ability of sugar factories to provide sugar cane seeds on time and in sufficient quantity. In addition, sugar cane farmers in Purwodadi Sugar factory also lacked confidence in the sugar factory that was willing to facilitate the procurement of fertilizers so they gave a low behavioral response to the statement of willingness to buy fertilizers provided by sugar factories through sugar cane farmers cooperatives. The farmers in all PTPN XI sugar factories were actually willing to buy fertilizers from any sugar factories or institutions appointed by the sugar factories such as cooperatives, provided

that the institutions must be able to commit to providing sufficient quantities of fertilizers in a timely manner.

The farmers complained about the difficulty of accessing fertilizers even though it was done through the sugar cane farmers cooperatives. In fact, they had to wait for a long time to get fertilizers from the sugar cane farmers cooperatives even though it was already in the time of fertilization. The optimal application of nitrogen fertilizer will have a positive impact on plant performance (Saleem et al., 2012).

Effect of Perception and Motivation of Farmers' Response to the Consolidation Plan of Sugar cane Management Program

Motivation and perception are the internal factors of farmers which play a dominant role in farmers' decision making. The influence of

motivation and perception on farmers' behavioral response to the consolidation plan of sugar cane management at PTPN XI is presented in Table 5.

The influence of individual variables revealed that the variables of farmers' motivation, farmers' perceptions, farmers' education, Purwodadi sugar factory dummy and Pradjekan sugar factory dummy significantly influenced farmers' responses to the consolidation plan of sugar cane management at PTPN XI [prob. t. < α (0.01) and (0.05)]. Farmers' motivation related to the sugar cane management consolidation program significantly influenced farmers' behavior to the consolidation plan of sugar cane management [prob. t (0.000) > α (0.001)]. Farmers' motivation and behavioral responses had a positive relationship ($\beta_1 = 0.561$). Behavior occurs because of motivation

Table 5. The coefficient of the influence of Perception and Motivation of Farmers' Response to the Plan of Sugar cane Management Consolidation Program

| Variable | Expected sign | Coefficient | t statistic | Prob.t |
|----------------------|---------------|----------------------|-------------|------------|
| Constant | +/- | 1.464 ^{ns} | 0.861 | 0.390 |
| Motivation (%) | +/- | 0.561*** | 4.614 | 0.000 |
| Perception (%) | +/- | 0.450*** | 3.535 | 0.000 |
| Age of farmer (year) | +/- | -0.169 ^{ns} | -1.476 | 0.141 |
| Farmer education | +/- | 0.594** | 2.478 | 0.014 |
| Dummy type of land | +/- | -0.224 ^{ns} | -0.800 | 0.424 |
| Dummy Djatiroto | +/- | -0.275 ^{ns} | -0.607 | 0.544 |
| Dummy Semboro | +/- | 0.003 ^{ns} | 0.006 | 0.995 |
| Dummy Pagotan | +/- | 0.502 ^{ns} | 1.140 | 0.256 |
| Dummy Purwodadi | +/- | -1.298** | -2.612 | 0.010 |
| Dummy Pradjekan | +/- | -2.520*** | -5.104 | 0.000 |
| Adj R ² | | | | 30.4 |
| F Statistic/ Prob. F | | | | 11.55/0.00 |

Source: Primary Data Analysis (2018)

Note:

*** = significant at $\alpha = 1\%$; ** = significant at $\alpha = 5\%$

ns = not significant

or encouragement that directs individuals to pursue certain goals (Tohidi & Jabbari, 2012; Wirawan & Rahardja, 2015). The level of motivation in participating in an activity is influenced by external characteristics, namely incentives / honorarium and the availability of infrastructure (Rukka & Wahab, 2013).

Fact in the field, farmers are often constrained by poor service from sugar cane cooperatives that act as intermediaries between farmers and sugar cane factories. The planned of a sugar cane management consolidation program, with the sugar factory as a direct coach, raises the optimism of farmers that sugar cane management can be better. The role of sugar cane factory that want to interact directly with farmers, causes farmers motivation are positively influencing their response to the consolidation program.

Farmers' perceptions related to the sugar cane management consolidation program significantly influenced the farmers' behavioral response to the cane grower management consolidation plan [prob.t (0.000) < α (0.01)]. Perception of benefits has a positive effect on a person's behavior ($\beta_2 = 0.451$) when there are benefits that they can get (Aprilia, 2017). These farmers perceived that the consolidation program would provide positive benefits to their farming.

In fact, many farmers had a high expectation to be guided again by sugar factories, because farmers believed that the availability of sugar factory resources was better than cooperatives. The sugar factory can provide seed accurately because it is supported by the

research function possessed. In addition, the supply of working capital funds for farmers can also be supported by sugar factories before their credit program is disbursed by banks.

Motivation and perception had a significant influence on farmers' responses to a program plan (Wijayanti et al., 2016). Farmers' education significantly influenced farmers' behavioral responses to the consolidation plan of cane grower management [prob.t (0.014) < α (0.05)] with a positive influence ($\beta_4 = 0.594$). Education is one of the factors that influences farmers' behavioral responses (Novia, 2011). The higher the level of farmers' education, the better the insight of farmers (Suwanto et al., 2012), the better the level of understanding of farmers about the consolidation of cane grower management, thus resulting in a positive behavior response.

Irrigated land farmers had several education namely elementary school (15.7%), and junior high school (12%), high school (42.6%), bachelor degree (29.6%). Whereas in rainfed land farmers, there are a few uneducated farmers (1.5%) from Purwodadi and Pradjekan sugar factories. Rainfed land farmers education consists of elementary school (20.9%), junior high school (13.4%), high school (50.7%), and bachelor degree (13.4%). Generally, the education of farmers who have a low behavioral response were elementary school, junior high school and a small number of high schools.

Dummy sugar factories that significantly influenced farmers' behavioral responses to the

consolidation plan of sugar cane management were Purwodadi [prob.t (0.01) < α (0.05)] and Pradjekan sugar factory [prob.t (0.00) < α (0.01)]. The farmers who were under Purwodadi sugar factory had a behavioral response to the consolidation plan of sugar cane management by -1.298% compared to Asembagus sugar factory. Meanwhile, in Pradjekan sugar factory, the farmers had a behavioral response to the consolidation plan of sugar cane management by -2.520% compared to Asembagus sugar factory. The farmers in Purwodadi and Pradjekan sugar factories were not willing to buy seeds provided by sugar factories because they were not sure that the sugar factories were ready and able to provide superior seeds in the right amount and time. In addition, Purwodadi sugar factory was a sugar factory utilizing steam generators which is inefficient and causing sugar cane yield to become not optimal.

CONCLUSION AND RECOMMENDATION

In terms of the level of motivation and perceptions of sugar cane farmers on the consolidation plan of cane grower management, there are differences between farmers in irrigated land and rainfed land. In terms of the behavioral responses of sugar cane farmers, there is no significant difference between irrigated land and rainfed land farmers to the consolidation plan of cane grower management. The influence of motivation, perception, education, dummy variables of Purwodadi sugar factory and Pradjekan sugar factory

significantly influence farmers' responses to the consolidation plan of cane grower management at PTPN XI.

In order to improve the behavioral response of sugar cane farmers in Purwodadi and Pradjekan Sugar Factories, it is necessary to provide supervision regarding the management of cane grower and the benefits that farmers will obtain from the program. It aims to make farmers interested in understanding the objectives of the program, so they have a good perception of the consolidation plan of cane grower management. Actually, the socialization of consolidation plan has been carried out but not massive so farmers' knowledge about benefits of the sugar cane management consolidation plan not well understood and farmers still skeptical with consolidation plan. As we know the performance of sugar factories in producing white crystal sugar has decreased (Subiyanto, 2014). This makes some farmers do not believe in the performance of sugar factories.

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