International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Index Copernicus Value (2016): 79.57 | Impact Factor (2017): 7.296

Impact of Upsus Corn (*Zea mays, L*) Program on Increasing Production and Income of Corn Farmers in Tanjung Lago District Banyuasin Regency

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Abstract: ***The Special Efforts Program (UPSUS) is one of the Indonesian Government's programs in overcoming the food crisis. One of the activities in the UPSUS program is to distribute aid in the form of corn seeds and other production facilities that are expected by the existence of this program the government can contribute to increasing the production of corn farmers. This study aims to (1) analyze what factors affect farmer production in corn farming before the UPSUS program and after the UPSUS program in Tanjung Lago District, Banyuasin District, (2) how much income does corn farmers earn before and after program upsus. From the population of 756 families, 60 samples were taken using the Stratified Random Sampling method. The regression results show that before UPSUS in the study area there were 4 (four) production factors that affected corn production namely corn seeds, urea fertilizer, SP36 fertilizer and labor but after UPSUS there were only 2 (two) factors affecting fungicide and labor. The causes of this are (1) the seeds distributed in the UPSUS program are not suitable and do not match the type of land in the study area, (2) differences in climate before and after UPSUS corn. The income of corn farmers before upsus was 3,009,179 / Ha and after the program upsus was 12,040,627 / Ha***

Keywords: corn, Upsus program, production, income

1. Introduction

Rice, Corn and Soybean Efforts are a government program contained in the Indonesian Minister of Agriculture Regulation number 03/Permentan/OT.140/2/2015, this regulation focuses on three food commodities namely rice, corn and soybeans to increase production (UPSUS Guidelines , 2015). The impact of this program is that Indonesia can increase corn production to meet its own food needs without assistance from other countries (imports). In Indonesia, corn is the second most important food after rice. Currently processing of corn plants is increasing. All corn plants are useful, because almost all parts of the plant can be used for various purposes including animal feed, compost, paper and textile industry (Geo, 2015).

According data from the USDA (United State Department of Agriculture), consumption of corn in the Asia Pacific region is currently 60% for animal feed, 30% for human food and 10% for biofuel. Corn consumption in the Asia Pacific region increased by 77% due to biofuel needs. In Indonesia 55% of corn is used for feed, 30% for community consumption and the rest for other industries and seeds. (Paeru, Rudi. H, 2017).

Based on BPS data and studies of several agencies, it was shown that several regions in South Sumatra had land suitability for the development of maize crops. In fact, several districts have become centers for planting corn in South Sumatra, namely Ogan Komering Ulu, Ogan Komering Ilir, Muara Enim, Lahat, Musi Banyuasin, Banyuasin and Musi Rawas (Rudi Soehendi, 2013).

Based on BPS Banyuasin data (2015) that Banyuasin Regency has a contribution to the production of corn commodities in the Province of South Sumatra. In 2014 corn production amounted to 40.69 tons and in 2015 increased by 104,170 tons, this made Banyuasin District have the potential for the development of corn plants. The optimal potential of paddy fields and cultural culture of the people who mostly plant corn is one of the important factors for the Banyuasin Government to further increase corn production in Banyuasin Regency. This potential will be more felt when the corn upsus activity is carried out in this area. Today maize is the biggest contributor after rice in the food crop subsector, the contribution of corn continues to increase against Gross Domestic Product even in the economic crisis (Zubachrudin, 2007).

The Special Efforts Program for corn serves to increase corn production in Indonesia, one of which is South Sumatra in the Banyuasin District of Bangunsari Village, farmers in Bangunsari Village are farmers who have low income and production due to input problems, but after the upsus program, farmers get inputs such as corn seeds, so the study of the impact of the upsus program on the production and income of corn farmers is important. The purpose of this study was to determine what factors affect corn production before and after the upsus and how much income corn farmers had before and after the upsus.

2. Literature

Rice, Corn and Soybean Efforts are actually more emphasized in various activities / efforts to increase the planting area and productivity in the centers of food production, for this achievement the government carries out activities in various ways starting from providing funds, mobilizing aid workers such as related agencies , repair of damaged irrigation networks, fertilizer assistance, availability of appropriate superior seeds (type / variety, quantity, place, time, quality, price), assistance from tractors and other

machinery that support preparation, harvest and post-harvest including marketing certainty. This effort is nothing but wanting to overcome the substantive problems of land conversion and fragmentation of agricultural land, damage to irrigation networks / infrastructure, the increasingly high wages of labor due to inadequate farmers' income, lack of technology-based agricultural equipment, losess, not yet fulfilled the number of superior seeds and fertilizers in accordance with location specifications, weak capital of farmers, commodity prices that fell when marketed and difficult to market the results at the time of harvest (Direktorat Jenderal Sarana dan Prasarana, 2015).

Production can be seen as a process of transforming resources into products. Resources are combined with technology to produce output. Productivity measures how efficiently resources are used, the higher the productivity, the more goods and services produced with a certain amount of resources (Eachern, 2000).

Farming income is the value obtained from the difference between total revenues obtained with total costs incurred during the production period, this total cost consists of fixed costs and variable costs (Yesri, 2017). Fixed costs are costs that are not dependent on the size or size of the production produced, while variable costs are costs whose magnitude is affectd by the volume of production (Soekartawi, 1990).

3. Research Methods

3.1 Method of Collecting Data

The data used in this study consisted of primary data and secondary data. Primary data was obtained by researchers through field observations and direct interviews with corn farmers in Bangunsari Village with questionnaires. Secondary data obtained by researchers originating from agencies and service agencies such as the Office of Agriculture of South Sumatra Province, Central Sumatra Provincial Statistics Agency, Central Bureau of Statistics of Banyuasin Regency, Extension Work Plan of Tanjung Lago District

3.2 Sampling Method

The sampling method used was the Stratified Random Sampling method with a population of corn farmers in Bangunsari with 756 households (KK) and 60 people taken as samples in the study.

3.3 Data Processing Method

3.3.1 Multiple Linear Regression Analysis

The equation used is multiple linear regression where the independent variables in the study are land, seeds, fertilizers, pesticides and labor. The estimation equation is formulated in the general form of multiple linear regression equations with the Cobb Douglas type approach model that has been transformed first in the form of logarithms. Linear regression analysis is a statistical method that aims to create a model to explain the correlation between independent variables and the dependent variable. Multiple linear regression is a linear regression analysis that uses two or more independent variables (Riandini, 2018), so the equation is

Before and after the upsus :

$$\text{Log } Y = \text{Log}\alpha + \beta 1 \log X1 + \beta 2 \log X2 + \beta 3 \log X3 + \beta 4 \log X4 + \beta 5 \log X5$$

Where in :
Y = Corn Production (Kg)
α = intercept
X1 = Corn area (Lg)
X2 = Corn seeds (Kg / Lg)
X3 = Fertilizer (Kg / Lg)
X4 = Pesticide (Lt / Lg)
X5 = Labor (HOK / Lg)
βn = i variable regression coefficient (i = 1,2,3,4,5)

Model validation as an indicator is also based on the coefficient of determination (R^2). The coefficient of determination (R^2) means measuring how far the ability of the model to explain the independent variable. The coefficient value on determination (R^2) is 0 to 1. If the coefficient of determination gets closer to 1, it means that the affect of the independent variable on the dependent variable is strong, which means that the independent variables provide almost all the information needed to predict the dependent variables. The formula used to calculate the value of R^2 according to Gomez (1995) is:

$$R^2 = \frac{JK\ regresi}{JK\ total} \quad (1)$$

The accuracy of the formulated model can be determined by doing an F-statistical value analysis, by proposing a hypothesis:
Ho: βi = 0
H1: one βi ≠ 0

If Fcount ≤ Ftable, it can be decided to accept Ho, meaning that there is no significant effect on the independent variables together on the production of soybean farmers. But if Fcount> Ftable, it can be decided to reject Ho, meaning that the independent variables together have a significant effect on the production of soybean farmers. So to calculate the magnitude of F can be searched using a formula (Gujarati, 1999):

$$\text{F-test} = \frac{R^2/(k-1)}{1-R^2/(n-k)} \quad (2)$$

Where:
R^2 = coefficient of determination
k = Number of regression coefficients
n = Number of observations

Testing using t-statistics is intended to find out how the affect of independent variables on the dependent variable in the estimator regression equation. Then the hypothesis that can be proposed is as follows:
Ho: βi = 0
H1: βi ≠ 0, where i = 1,2,3,4

The rules of decision making for testing hypotheses that have been proposed, if thitung> t table, then Ho is rejected while

H1 is accepted. This shows that the independent variable partially has a significant effect on the dependent variable. Conversely, if tcount <ttable, this can be decided to accept Ho while H1 is rejected. This means that partially the independent variable cannot give a significant affect. This partial coefficient test can use formulas (Gujarati, 1999):

$$\text{t-test} = \frac{\beta i}{Se\ \beta i} \text{ when } Se\ \beta i = \sqrt{Varian\ (\beta i)} \quad (3)$$

3.3.2 Analysis of Farmer Income

The income of farmers in the research location, the following formula is used:
TR = Py. Y
Pd = TR - TC

Where:
Py = Product Price (Rp. / Kg)
Y = Number of products (kg)
Pd = TR - TC (Rp)
TC = Total Cost / Total Cost (Rp)
TR = Total Revenue

Then to analyze the magnitude of the difference in income before and after the upsus by using the t value test, and problem solving is tested using the distribution of t which can be formulated as follows (Antoni, 2006):

$$t = \frac{\bar{d} - \mu d}{\delta d / \sqrt{n}} \quad (4)$$

Where :
t = statistical test
db = n ─ 1
d = the average difference in average observation

$$\bar{d} = \frac{\sum(x1-x2)}{n} = \frac{\sum d}{n}$$

$$Sd = \sqrt{\frac{n(\sum d^2)-(\sum d)^2}{n(n-1)}}$$

μd = middle value difference
n = number of different observations

With the hypothesis used as follows:

Ho : $\mu_1 = \mu_2$

Ha : $\mu_1 \neq \mu_2$

α = 0,10

The rules of decision used are as follows:
Ho = there is no difference between the average income of farmers before and after upsus
Ha = there is a difference between the average income of farmers before and after upsus
If t count <t table, then accept Ho, meaning there is no difference between the income of farmers before and after upsus
If t count> t table, then reject Ho, meaning that there is a difference between the income of farmers before and after upsus
Or If Sig (2-tailed)> (α = 0.10), then accept Ho.
If Sig (2-tailed) <(α = 0.10), then reject Ho.

4. Result and Discussion

4.1 Production Factors Affecting Corn Production Before Upsus

Some of the factors affecting corn production discussed in the study are the factors considered to determine corn production in the condition before the upsus program namely seeds, urea, sp36, NPK, herbicides, insecticides, fungicides and labor. The results of regression analysis of factors affecting corn production before upsus in the study area can be seen in Table 1.

Table 1: Results of Regression Analysis of Factors Affecting Corn Production Before Upsus In Bangunsari Village

No	Variabel	Bi	Se	t	Sig-t
1	Konstanta	2.728	0.123	22.197	0,000
2	Corn see(Kg/Ha)	0.137	0.037	3.763	0,000*
3	Urea(Kg/Ha)	0.059	0.029	2.033	0.047**
4	Sp36(Kg/Ha)	0.074	0.024	3.12	0.003**
5	NPK(Kg/Ha)	0.065	0.043	1.533	0.132
6	Herbicide(Lt/Ha)	0.051	0.034	1.489	0.143
7	Incekticide(Lt/Ha)	0.017	0.026	0.656	0.515
8	FungicideLt/Ha)	-0,007	0.013	-0.56	0.578
9	Labor (HOK/Ha)	0.154	0.054	2.876	0.006***

R^2= 0,941 F=102.426
Keterangan :
* = Signifikansi 1% (0,01)
** = Signifikansi 5% (0,05)
*** = Signifikansi 10% (0,10)

In table 1 can be seen the regression value of each production factor where the regression coefficient shows the production elasticity of the independent variable with a real level α = 10%. Factors that affect corn production are seeds, urea, SP3, NPK, herbicides, insectides and fungicides and labor, but those that meet the criteria of α = 10%, namely seeds, urea, SP36 and labor.

Classical Assumption Test
The classic assumption test results explain that multiple linear regression models aim to see whether there are equations that are used well or not so that the results of the classic assumption test from multicollinearity test, heterocedasticity test, and normality test that there are no variables that have correlation, so the equation model does not occur heterocedasticity but is homokedasticity and data spread normally. Based on multiple linear regression analysis, the estimation equation is :

Log Y =2.728+0.137 Log X1+0.059 Log X2+0.074 Log X3 +0.065 Log X4+0.051 LogX5+0 0.017 Log X6–0.007Log X7 + 0.154 Log X8

Where :
Y = Corn Production (Kg)
α = intercept
X1 = Corn seed (Kg)
X2 = Urea (Kg / Ha)
X3 = SP36 (Kg / Ha)
X4 = NPK (Kg / Ha)

X5 = Herbicide (Lt / Ha)
X6 = Insecticide (Lt / Ha)
X7 = Fungicide (Lt / Ha)
X8 = Labor (HOK)
βn = i variable regression coefficient (i = 1,2,3,4,5)

R^2 test

This R^2 test looks at how much the variable X contributes to variable Y. The results of the analysis of the coefficient of determination show that the variables of seeds, urea, SP36, NPK, herbicides, insecticides, fungicides and labor can explain the dependent variable of 94.1%, while the remaining 5, 9% is affectd by other variables not included in the model or not discussed in this study.

F test

The F test is used to see how much the independent variables affect the dependent variable together. The F test is done by comparing F count with F Table. If F count> from F table, (Ho is rejected Ha accepted. The results of data analysis using SPSS, obtained F test of 102,426 with a significance level of 0,000, which means the error rate of the test is 0 percent. This explains that the independent variable is seed , urea, SP36, NPK, herbicides, insecticides, fungicides and labor together affect the dependent variable is production of 102,426.

t test

The Effect of Corn Seeds

Based on the regression results, the affect of seeds on corn production in Bangunsari Village has a significant effect on α = 0.01 and this means that seeds have a positive effect on changes in soybean production. The regression output proves that the elasticity of the seed variable production rate is 0.137. This figure shows that each addition of one kilogram of seed per hectare will increase corn production by 0.137 tons. The value of t count statistically shows that the t-count for the seed factor is 3.763 while the t table is 1.29, this shows that t count> t table with a significant level of 0.000 means that the seed factor has a significant effect on maize production at the 5% confidence level or 10%.

Effect of Urea Fertilizers

In order for nutrient adequacy for growth in corn plants to be fulfilled, plants need to be fertilized. Fertilization is done to increase the nutrients contained in the soil. The dosage of fertilizing urea fertilizer used is generally around 200-300 kg / ha (Penebar Swadaya, 2017). The use of urea fertilizer on corn farming before program upsus showed a positive relationship with the regression coefficient of 0.059. This value implies that fertilization carried out by corn farmers on the cultivated corn is good enough so that every one kilogram of urea per hectare will increase corn production by 0.059 tons.

Statistically t count values show that the urea fertilizer count is 2.033. This shows that t count> t table where t table is worth 1.29 with a significant level of 0.047 means that the use of urea fertilizer has a significant effect on corn plants before upsus with a confidence level of 5%.

Effect of SP 36 Fertilizers

The second fertilizer used by farmers is Sp-36 fertilizer, the treatment for SP 36 fertilizer carried out by corn farmers in this village is at the beginning of the planting where the fertilizer is spread which has been mixed with urea and NPK in the path that farmers have made with distance about 10 cm from the row of plants with a depth of 10 cm, but sp 36 fertilizer has been mixed with other fertilizers.

The value of t count statistically shows that t count is 3.120 while t table is worth 1.29, it can be concluded that t count> t table, this means that SP 36 fertilizer has a significant effect on corn production. The use of SP 36 fertilizer has a positive affect on maize production which has a regression coefficient of 0.074 which means that the addition of one kilogram of SP 36 fertilizer will increase corn production by 0.074 tons.

Effect of NPK Fertilizers

There are three types of fertilizers added by farmers to increase the nutrients in the soil so that they can help the maize plants produce large production, in addition to urea and SP 36, NPK fertilizer is also added. The use of NPK fertilizer on corn farming before upsus showed positive results with a regression coefficient of 0.065. This value means that the addition of one kilogram of NPK fertilizer will increase corn production by 0.065 tons.

Based on the results of regression analysis the effect of NPK fertilizer had no significant effect on the α level of 10%, the use of NPK fertilizer had no significant effect because there had been an affect from the use of urea fertilizer with SP 36 fertilizer, where NPK fertilizer was only as fertilizer additives in mixing urea and fertilizer SP 36.

Effect of Herbicides

The statistically calculated t value in the herbicide variable shows that t count> t table, where t count is 1.489 and t table is 1.29, this means that herbicides affect the development of maize. The regression coefficient of this herbicide is 0.051, which means that the addition of 1 liter of herbicide will increase corn production by 0.051 tons. The significance level of the herbicide variable is 0.143, which means that the use of herbicides does not significantly affect the development of corn before upsus because before the upsus the climatic conditions are not the rainy season so there is not much weed growth, where weeds will grow in damp places.

Effect of Insecticide

The value of t statistically in insecticide variables is 0.656 while t table is worth 1.29, this indicates that tcount <t table with a significant level of 0.515 means that the effect of insecticides does not significantly affect corn production before conditions either at upsus 10 %. The regression coefficient of this insecticide is 0.017 which means that every addition of one liter of insecticide will increase corn production by 0.017 tons.

The use of this insecticide has no significant effect on corn production after upsus. This is because the use of pesticides is related to the knowledge of farmers in Bangunsari Village, farmers' knowledge is not only obtained by farmers from formal but informal seats. Farmers in Bangunsari Village understand that by using insecticides continuously that are

not according to dosage can kill maize pests and their natural enemies, if natural enemies are no longer in the land ecosystem, pest levels will increase so that corn pests cannot be controlled and there is no use system scheduled insecticides by the government under conditions before upsus.

Effect of Fungicides

A fungicide is one of the pesticides that serves to eradicate fungi or sweet potatoes which can reduce corn production. The value of t count statistically shows that t count <t table where t count is -0.560 and t table is 1.29 this means that the use of fungicides has no significant effect with a significant level of 0.578 so fungicide does not have a significant effect on the 10% confidence level. Regression coefficient of this function is equal to - 0.007 which means the addition of one liter of fungicide can reduce production by -0.007 tons. The use of this fungicide has no significant effect in the study area because at the time before the upsuscence the climate conditions enter into the dry climate so that the fungus does not grow.

Effect of Use of Labor

The use of labor in this study includes all labor devoted to the corn production process. The wages imposed in Bangunsari Village are a daily wage system and each production process incurs different costs such as planting Rp. 40,000, fertilizing and harvesting Rp. 50,000. the use of labor before upsus in the study area shows a positive relationship with a regression coefficient of 0.137, which means that every addition of a workforce of one HOK will increase corn production by 0.137 tons. The value of t arithmetic> t table where the value of t count is 2.876 and t table is 1.29, with a significance level of 0.006 means that the labor factor has a significant effect on rice production at 10% confidence level.

4.1 Production Factors Affecting Corn Production After Upsus

A program is a way to give farmers a way out of problems or help farmers to save on production costs, as well as an upsus program, emphasized at the start of the research that the upsus program is an activity that can help farmers and increase farmers' income. There are several factors that affect the production of corn in the program upsus not different from before the program upsus, namely seeds, ures, SP36, NPK, herbicides, insecticides, fungicides and labor. Some of the factors of production can be explained in Table 2.

Table 2: Results of Regression Analysis of Factors Affecting ProductionCorn After Upsus in Bangunsari Village

No	Variabel	Bi	Se	thit	Sig-t
1	Konstanta	3.829	0.188	20.348	0
2	Corn see(Kg/Ha)	0.001	0.083	0.015	0.988
3	Urea(Kg/Ha)	0.071	0.043	1.642	0.107
4	Sp36(Kg/Ha)	0.054	0.038	1.416	0.163
5	NPK(Kg/Ha)	0.043	0.065	0.66	0.512
6	Herbicide(Lt/Ha)	-0.057	0.053	-1.072	0.289
7	Incekticide(Lt/Ha)	0.045	0.041	1.108	0.273
8	FungicideLt/Ha)	0.055	0.022	2.529	0.015**
9	Labor	-0.179	0.083	-2.164	0.035**

$R^2 = 0.614$ Fhit=10,136

Keterangan :

* = Signifikansi 1% (0,01)

** = Signifikansi 5% (0,05)

*** = Signifikansi 10% (0,10)

In table 2, it can be seen the regression value of each production factor where the regression coefficient shows the production elasticity of the independent variable with a real level of α = 10%. The factors that affect corn production are seeds, urea, SP3, NPK, herbicides, insectides and fungicides and labor, but those that meet the criteria of α = 10% are fungicides and labor.

Classical Assumption Test

The classic assumption test results explain that multiple linear regression models aim to see whether there are equations that are used well or not so that the results of the classic assumption test from multicollinearity test, heterocedasticity test, and normality test that there are no variables that have correlation, so the equation model does not occur heterocedasticity but is homokedasticity and data spread normally. Based on multiple linear regression analysis, the estimation equation can be formulated is :

Log Y = 3.829+0.001 LogX1+0.071 LogX2+0.054 LogX3+ 0.043 LogX4-0.057 LogX5 + 0.045LogX6 + 0.055 LogX7 – 0,179 LogX8

Where :

Y = Corn Production (Kg)

α = intercept

X1 = Corn seed (Kg)

X2 = Urea (Kg / Ha)

X3 = SP36 (Kg / Ha)

X4 = NPK (Kg / Ha)

X5 = Herbicide (Lt / Ha)

X6 = Insecticide (Lt / Ha)

X7 = Fungicide (Lt / Ha)

X8 = Labor (HOK)

βn = i variable regression coefficient (i = 1,2,3,4,5)

R^2 test

This R^2 test looks at how much the variable X contributes to variable Y. The results of the analysis of the coefficient of determination show that the variables of seeds, urea, SP36, NPK, herbicides, insecticides, fungicides and labor can explain the dependent variable 61.4%, while the remaining 38, 6% is affectd by other variables not included in the model or not discussed in this study.

F test

The F test is to see how much affect the independent variables have on the dependent variable together. The F test is done by comparing F count with F Table. If F count> from F table, (Ho is rejected Ha accepted. The results of data analysis using SPSS, obtained F test of 10.136 with a significance level of 0.000, which means the error rate of the test is 0 percent. This explains that the independent variable is seed , urea, SP36, NPK, herbicides, insecticides, fungicides and labor together affecting the dependent variable is production of 10.136.

t test

Effect of Corn Seeds

The calculation statistically shows that t count is 0.015 while 1.29, this shows that t count <t table with a significance level of 0.988 means that the seeds used after upsus have no effect on the level of trust either 5% or 10%. The regression coefficient of the use of seeds is 0.001, meaning that with the addition of one kilogram per hectare seeds will increase production by 0.001 tons.

The seed has no effect at the 5% level and 10% is significant after upsus because the farmer still uses the usual seed planted in a state before upsus. In May 2016, corn upsus was carried out in Bangunsari Village by providing seeds of assistance, the seeds given were P35 seeds, after being planted by P35 seed farmers it turned out that it was not suitable for the farmers' land so farmers were disappointed because they had less seed yields satisfying and declining income. So it can be concluded that there has been no change after upsus occurred in the study area due to seed incompatibility. But after the upsus of corn this demand (demand) for corn feed increases along with the upsus SIWAB (Sapi Indukan Wajib Bunting) to meet animal feed.

Effect of Urea Fertilizers

The use of urea fertilizer on corn farming after receiving program upsus shows a positive result with a regression coefficient of 0.071, this value means that each addition of one kilogram of urea per hectare can increase corn production by 0.071 tons. The value of t count for urea is 1.642 while t table 1.29 means that urea still affects corn production but not in α 10%, theoretically the use of urea affects the development of maize, but in the state of urea research area has an effect but does not significantly affect after there is an upsus program because it is affectd by factors not calculated by researchers, namely climate factors. The climatic conditions after upsus are rainy, where in addition to fertilization, the provision of water is also important for plants to carry out metabolic processes including sentawa transport, retain cell tugor, maintain temperature and photosynthesis (Nidayani, 2014).

Effect of SP36 Fertilizers

The effect of using SP36 shows a positive relationship with maize production with a regression coefficient of 0.054 meaning that the addition of SP36 fertilizer by one kilogram will increase production by 0.054 tons. the tcount is 1.416 while the ttable value is 1.29 which means that tcount> t table has a significant effect on maize production but not in α 10%, this is because the fertilizer used by farmers namely urea fertilizer, SP36 fertilizer and NPK fertilizer mixed into one is only applied to corn plants so that SP 36 fertilizer does not independently affect the corn plants.

Effect of NPK Fertilizers

The effect of NPK fertilizer use shows a positive relationship to corn production with a regression coefficient of 0.043 which means that each addition of NPK fertilizer will increase corn production by 0.043 tons. t value statistically shows that t count is 0.660 and ttable is 1.29 which means thit <ttab does not have a significant and not significant effect on α 10%, because there is a mixture of both fertilizers namely urea and SP36, NPK fertilizer does not affect real, because nutrient P is needed by plants in fewer quantities than nutrient N. Although nutrient P is very important for plants, because it plays a role in the process of root development so as to increase plant resistance to drought and accelerate fruit ripening and reduce the risk of late harvest (Sutejo , 2002)

Effect of Herbicides

The use of herbicides shows a negative relationship with the yield of corn with a regression coefficient value of -0.057 which means that the addition of one liter of herbicide will reduce corn production by 0.057 tons. The tcount for herbicide is -1.072 while t table 1.29 shows that thit <t table with a significant level of 0.289 means that herbicides do not significantly affect corn production after the program upsus. Herbicides have no effect on corn plants due to climatic conditions, where on the land of corn farmers in the Awakari village are planted with mushrooms / fungi instead of weeds.

Effects of Insecticide

The effect of insecticide use shows a positive relationship with corn production with a regression coefficient of 0.045 which means that each addition of one liter of insecticide will increase corn production by 0.045 tons. The value of t count is 1.108 and the value of ttable 1.29 has an effect but not significant in the level of α 10. Insecticides do not affect the corn plants because farmers use different doses / sizes.

Effect of Fungicides

The effect of the use of fungicides shows positive results with corn production after the program upsus with a regression coefficient of 0.055 which means that each addition of one liter of fungicide will increase corn production by 0.055 tons. The value of t count shows that 2.529 and ttable 1.29 have a significant effect on the production of corn with a significant level of 0.015, meaning that the functionida has a significant effect on the confidence level of 5% and 10%.

Effect of Labor

The effect of labor shows a negative result after this upsus program with a regression coefficient of -0.179, which means that every addition of labor will reduce corn production by 0.179 tons. The value of t count is -2.164 and the value of t table is 1.29 so that it does not significantly affect corn production, but labor has a significant effect after upsus with a value of 0.035. In circumstances after upsus it was emphasized that farmers in corn farming should use technology in the application of agricultural machinery to save time and save labor costs, but farmers in Bangunsari Village still use human labor rather than technology or agricultural machinery.

4.2 Analysis of Corn Farmer Income Before and After the UPSUS Program

The corn production analyzed in this study is hybrid corn for animal feed not for human consumption. This corn plant can only be planted in one planting season, namely in May-August. Corn production in the condition before and after the upsus program can be seen in Table 3.

Table 3: Corn Farm Production Before the Upsus Program and After the Program Upsus

No	Kind of cost	Rata – Rata Produksi	
		Before(Ha/Mt)	After(Ha/Mt)
1.	Production cost		
	-Fixed cost	Rp.320.133	Rp.320.133
	-Variabel cost	Rp.12.069.321	Rp.12.540.873
2.	Production result	5.728 Ton	7.029 Ton
3.	Revenue	Rp.15.078.500	Rp.24.581.500
4.	Income	Rp.3.009.179	Rp.12.040.627

Fixed costs in the before and after upsus are the same because the tools used in these two different conditions remain the same. Variable costs used are different because there is a cost of renting a shelling machine that depends on the farmers' production. The yield of corn after upsus increases because after the upsus occurs in the rainy season where at the beginning of planting, corn plants really need water so that the production increases by 7,029 tons compared to before upsus where the climate conditions are dry.

Receipts before upsus were lower at Rp. 15.078.500 while after upsus farmers' revenues increased by Rp. 24.581.500, this difference was due to price differences experienced in two conditions, where after upsus demand for corn increased due to corn upsus in line with upsus SIWAB (Compulsory Breeding Cow). Then the difference in income of corn farmers before and after upsus in Bangunsari Village, Tanjung Lago District, Banyuasin Regency can be explained through the t test in table 4.

Table 4: Test Results t of Corn Farmers' Income Before and After Upsus

	t	df	Sig(2-tailed)
Before and after Upsus	-28.287	59	.000

t-test

This Ttest test is used to find out whether there is a difference in income between the two conditions, namely before and after upsus. The value of decision making is based on comparing the value of Sig (2tailed) with α 0.10. If Sig (2-tailed) <α 0.10 then there is a difference in income of corn farmers before and after upsus, but if Sig (2-tailed)> α 0.10 then there is no difference in income of corn farmers before and after upsus. The ttest test results showed that Sig (2-tailed) <0.10 so that the decision was made that there was a difference in income of the corn farmers before and after upsus as the effect of the upsus program in Bangunsari Village.

In line with the research conducted by Sadat (2018), the number of corn farmers with the highest income was> Rp. 10,000,000 with a percentage of 74%, then earning between Rp. 5,000,000 - Rp. 10,000,000 with a percentage of 12%, then income <Rp. 1,000,000 with a percentage of 10%. The last income is Rp. 1,000,000 - Rp. 5,000,000 with a percentage of 8,00%. This shows that the income of corn farmers in Bulukumba Regency, South Sulawesi can be categorized as prosperous.

5. Result

Based on this study it can be concluded that the factors affecting production have a significant effect on corn production before upsus, namely seeds, urea, SP36 and labor, while after the upsus the production factor has a significant effect on corn production, namely fungicide and labor. The income of corn farmers after upsus is greater than the situation before upsus, the cause of the increase in income of corn farmers is due to the impact of the Upsus Program causing an increase in the selling price of corn. Corn income after an upsus of Rp.12,040,627/Ha/Mt and before the upsus of Rp.3.009.179/Ha/ Mt.

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