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Developing Agricultural Production in Sulu through the Use of Technical Facilities and Information Education for the Farmers

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I. INTRODUCTION

The fundamental factors affecting the development growth of Sulu are the lack of technical know-how, poor land use development plan, and lack of good governance. This issue is further compounded with lack of infrastructure facilities, insufficient power supply, and armed conflict in which the local government is incapable to address. Poverty in Sulu is actually the product of these issues. There has been no substantial improvement on the skills and productivity of the farmers. Neither use of technology to increase local production nor availability of technology is yet to be introduced to the local farmers. This problem is supposed to be included in the long-term and medium-term and annual socio-economic development plans and policies and local public investment program for the private enterprise can participate in the local development process.

This paper believes that the local government along with the field agencies of the national government and the academic institutions should spearhead in the acceleration of the modernization of the agriculture and fishery industry by investing more on technology transfer and improving the productivity of the farmers to spur economic growth. Without enhancing the skills of the local farmers and technology investment there can be no economic growth. The primary responsibility in providing skills lies on the local manpower training center and the academic institutions. Local government is there to monitor and assess the farmers of their needs. The objective of this paper is to assess the potentials of the agriculture and fishery industry in Sulu and how it can be improved. Methodology of this study is based on survey. The research instruments include community immersion, data analysis and interview.

II. Sulu Agricultural Landscape

Sulu is predominantly an agriculture area planted with variety of agricultural products. Out of the total land area of 167,376 hectares, about 94,500 hectares (56%) comprises the agricultural land based from the data of Department of Agriculture.

Table 1. Agricultural Land Area by Municipality

Municipality	*Total Land Area (Has.)*	*Agricultural Land (Has.)*
Indanan	10,190	8,759
Jolo	1,660	-
K.Caluang	5,583	3,350
Lugus	3,540	2,422
Luuk	16,712	11,610
Maimbung	4,790	3,520
Pansglima Tahil	4,950	128
Panamao	5,110	2,300
Pandami	8,699	3,619
Panglima Estino	4,500	1,000
Pangutaran	25,810	2,687
Parang	9,740	5,827
Pata	5,860	5,508

Patikul	17,930	15,750
Siasi	10,252	4,875
Talipao	14,100	12,690
Tapul	5,550	3,015
Banguingui (Tongkil)	12,400	7,440
Total	**167,376**	**94,500**

Source: DA-Sulu

The major agricultural crops in Sulu are coconut, cassava, abaca, coffee, banana, mango and exotic fruits like durian, lanzones, mangosteen, etc. Rice is also produced in the province but on a very limited scale in Luuk and Talipao municipality. Intercropping and multi-cropping are commonly practiced especially in coco-based farms.

Table 2. Production of Agricultural Crops (M.T.)

Crops	2001	2002	2003	2004	2005
Cassava	14,855.38	12,893.05	24,928.3	21,700.75	**22,621.7**
Coffee	909.435	855.85	4,576.85	4,502	**5,279.15**
Durian	856	824.5	2,387.2	2,366.7	**2,789.2**
Lanzones	15,237.25	16,325	16,870	16,543.5	**18,502**
Mangosteen	4,564.5	4,698.75	4,833	4,618.5	**5,235.75**
Marang	636.75	764.5	850	785.5	**1,061.25**
Mango	561	876.875	1,548.75	1,646.55	**2,958**
Banana	2,137.1	2,215.3	5,807.07	6,089.37	**6,457.3**
Rice					
Irrigated	1,457.3	1,613.35	1,460.42	1,480.57	**1,487.91**
Lowland	583.16	576.11	238.95	276.22	**280.53**
Upland	3,653.98	3,680.34	3,336.49	3,345.95	**3,464.47**
Corn					
Yellow	914.015	3,293.535	1,423.265	1,438.955	**1,510.05**
White	**664.27**	**659.985**	**910.415**	**963.6**	**993.75**

Source: DA-Sulu, 2001-2005

In the table we can see that in the year 2005 crops boomed its production as a result of the program implemented by Former Gov. Benjamin T. Loong.

Coconut is widely grown throughout the province which covers an area of 64,360 hectares based from PCA data. Yield of coconut varies from 3-4 MT copra per hectare. There were 6.16 million trees of which 5.87 million were fruit-bearing. Over the years, the number of hectares planted to coconut has decreased due to cutting and aging of trees. Coconut production was utilized mostly for copra and charcoal-making due to lack of technical know-how on coco-based processing.

In early 2003, BJ Coco Oil Mill was established for the first time in Sulu and is strategically located in Tanjung, Indanan. It is the only existing oil mill in the province and is principally engaged in buying copra and crushing copra to extract crude coconut oil and producing a by-product of copra cake. The mill has a crushing capacity of 175 tons a day, producing 108 tons of crude coconut oil and more than 60 tons of copra cake per day. The mill has an annual copra requirement of 52,000 metric tons. Using the Full Press Mechanical Process, an

advanced oil extraction technology, BJ Coco Mill has a higher oil recovery rate than the traditional methods used in conventional processing. Unfortunately, this Oil Mill ceased to operate in 2012 for unknown factors. (Source: Sulu Provincial Development and Physical Framework Plan PDPFP)

Cassava is a traditional crop in Sulu and is the staple food for majority of its people who have a menu of processed products like *piyutu*, *siyanglag*, *biyanban*, cassava cake, etc. Cassava has a cultivated area of 2,257.5 hectares. This indicates that cassava is widely grown among the various crops on alluvial, sloping and foothill area. Some farmers intercrop coconut with cassava or with upland rice and corn. Average yield of cassava is 10 MT per hectare.

In 2004, the Sulu Provincial Government assisted the local farmers by providing 20 farm tractors and provision of free planting materials (cassava stalks) in order to increase cassava production for commercial purpose. As such, the marketing tie-up with San Miguel Corporation (SMC) was initiated to ensure the market of the cassava production. Normal processing at the farm level is drying and chipping which are done manually. The LGU has yet to provide the farmers with driers and chipping machines.

Abaca is grown in about 3,333 hectares of Sulu's agricultural land. It is mostly concentrated in the municipalities of Indanan, Patikul, and Talipao. Patches of abaca are also grown in Maimbung, Parang and Panglima Estino. Its farm gate price ranges from Php 17.50 to 18.50 per kilo (manual stripping). Average yield for abaca in Sulu is 560 kg/hectare, which is significantly lower than the national average of 850 kg/hectare. Average volume per month is 356,550 kilograms which are exported to Zamboanga City, Cebu and Metro Manila.

Coffee has an area of 2,423.75 hectares and is concentrated in Patikul, Parang, Panglima Estino and Talipao. Yield is estimated to average only about 2 MT per hectare due to poor maintenance practices of the farmers, poor post-harvest handling method and inadequate facilities that produce low-quality beans. Improved economic benefits from coffee farming would entail rejuvenation coupled with improved cultural management practices.

The total area for *fruit trees* is 6,354.5 hectares. The major fruits grown in the province include durian, mangosteen, lanzones, citrus, bawnu and marang which are mostly found in the mainland municipalities. These fruits are marketable to other provinces and cities since these fruits command a high price compared to other fruits. Atis and citrus are abundantly grown in the island municipalities of Pangutaran, Tapul and Tongkil. Mangoes are widely grown throughout the province. Other fruit trees that are grown in patches include jackfruit, guyabano, santol, guava, rambutan, etc.

Rice area in the province is 1,007 hectares. Irrigated area is 287 hectares located in the municipalities of Indanan (32 hectares), Patikul (15 hectares), Luuk (180 hectares), Talipao (50 hectares) and Siasi (10 hectares). The average yield of irrigated rice is 56 cavans per hectare. Lowland rice has a total area of 156 hectares with an average yield of 42 cavans per hectare. It is grown in Indanan, Luuk, Patikul, Panamao, Panglima Estino, Siasi, Kalinggalan Caluang and Talipao. The area for upland rice is 564 hectares with an average yield of 36 cavans per hectare. Upland rice is grown in Indanan, Kalinggalan Caluang, Luuk, Panamao, Panglima Estino, Parang, Patikul and Talipao. Presently, most of the Communal

Irrigation Projects (CIPs), and Small Water Impounding Projects (SWIP) which are held in cultivating rice are no longer functional and needs to be rehabilitated. (Source: Sulu Provincial Development and Physical Framework Plan PDPFP)

Corn area is 736.35 hectares (yellow corn-474 hectares; white corn-262.35 hectares) which are mostly concentrated in Indanan, Pangutaran, Siasi, Talipao & Tongkil. Average yield of corn is 3.4 MT per hectare.

Other crops grown in Sulu are *banana* (2,883 hectares), *cacao* (1,036 hectares), peanut (2,800 hectares), pineapple (182 hectares), sugarcane (46 hectares), avocado (30 hectares), and camote (311 hectares

Vegetables have a relatively small area of 271.45 hectares (Leafy vegetables -74 hectares.; Fruit vegetables - 135.95 has.; Root vegetables - 61.5 hectares.

The following industries that have high potentials to local economic growth are: Seaweeds, Fruits, Coconut, Cassava and Fisheries. Except for Coconut which is processed as crude oil by BJ Coco Oil Mill, crops are exported as raw materials. Processing of these products will greatly contribute to the local economy of the province.

Other competitive advantages of Sulu are mat weaving, development of white beaches and cultural and historical sites. The province as agri-based economy is presently confronted with low production and poor quality of agri-fishery products. This problem is caused by high cost of inputs, poor technology adoption, and laxity of policy implementation.

III. Scope and Severity of the Problem

This study on developing agricultural production in Sulu through the use of technical facilities and information education for the farmers is focus only in the province of Sulu where the need for agricultural improvement is highly indispensable. Since Sulu is an agriculture-based province and many of its populace are relying mostly from the land resources. Due to the poor technology and low-technical know-how among farmers agriculture is not substantially contributing to poverty alleviation in the province as a whole.

Sulu's employable population (15 years and above) was 282,978 (60.2 %) of its total population (469.971) in 1990. Of the employable population, 102,558 are in the labor force while 179,420 are not. This translated to a low labor participation rate of 36.6%. Of those in the labor force, 81,940 (79.12 %) are employed while 21,618 (20.87 %) are unemployed. In effect, Sulu's unemployment rate in 1990 is 20.9 %. Further, since agriculture was the main source of employment, it appears that the bigger problem in Sulu is under employment. Agriculture utilizes only 10 to 40% of labor capacity depending on the crops being raised. The high rate of unemployment in Sulu and the incapacity to utilize arable lands are that the potential outputs which reach in millions of pesos are wasted every year.

Table 3 Concentration: Total Family Income by Sector/Industry, ARMM, 2000

Province	Agri/ Fish/ Forest	Mining & Quarrying	Manuf.	Const.	Service-related	Wholesale & Retail	Trans. Comm.	Others	Total
Basilan	11.8%	0.0%	10.9%	9.5%	9.9%	9.0%	14.1%	14.2%	11.5%

Lanao del Sur	23.5%	16.7%	13.3%	34.3 %	19.2%	27.9%	33.6%	21.9%	23.5%
Maguindanao	29.3%	0.1%	41.2%	32.1 %	31.7%	34.6%	28.5%	38.1%	31.5%
Sulu	25.6%	49.0%	6.1%	12.2 %	18.6%	20.4%	17.9%	13.6%	21.8%
Tawi-Tawi	9.8%	34.2%	28.5%	11.9 %	20.7%	8.0%	5.8%	12.2%	11.7%
ARMM	**100.0%**	**100.0%**	**100.0%**	**100.0 %**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: Family Income and Expenditure Survey, National Statistics Office

This table indicates that as to the family income of the families in ARMM, Sulu ranks second in agriculture which means that the income of the 25.6% of the people
generated from the said sector.

Sulu has a poverty incidence of 63.2 percent, seen as the highest of all the provinces. Poverty incidence is the way the people lose their incomes due to factors such as armed conflict, natural calamities, poverty, lack of skills, and injustices. For instance, military operation against lawless elements will displace families and become deprived of their livelihoods, hence they will fall below poverty line. The farmers in this province make up the poorest social sector, each farm family with an average income of only about P1,000.00 per month.

- Over the years, the number of hectares planted to coconut has decreased due to cutting and aging of trees. Coconut production was utilized mostly for copra and charcoal-making due to lack of technical know-how on coco-based processing. This is because there is no more Coco mill industry to process the raw materials into finished products.
- Normal processing at the farm level is drying and chipping of cassava which is done manually. The LGU is currently looking for means to provide the farmers with driers and chipping machines
- Coffee beans yield is estimated to average only about 2 MT per hectare due to poor maintenance practices of the farmers, poor post-harvest handling methods and inadequate facilities that produce low-quality beans. Improved economic benefits from coffee farming would entail rejuvenation coupled with improved cultural management practices. A reason why the income of the farmers is too low is the poor harvest.
- Presently, most of the Communal Irrigation Projects (CIPs), and Small Water impounding Projects (SWIP) which are held for the cultivation of rice in Indanan, Kalinggalan Caluang, Luuk, Panamao, Panglima Estino, Parang, Patikul, and Talipao of which upland rice is growing are no longer functional and needs to be rehabilitated. Low agricultural production could be attributed to the inadequacy in irrigation facilities in the municipalities. (Data taken from DA)
- Average yield for abaca in Sulu is 560 kg/hectare, which is significantly lower than the national average of 850 kg/hectare. Average volume per month is 356,550 kilograms which are exported to Zamboanga City, Cebu and Metro Manila.

IV. Factors Affecting Local Agricultural Production

a. Definition of the problem

The problem identified in this study is the low production of agricultural products due to poor technical facilities and lack of knowledge of the farmers. This emphasizes the lack of support given by the local government to the Tausug

farmers to improve their agricultural productivity. As a result, to these lapses, Sulu ranked as one of the poorest provinces and high unemployment where the people continue to suffer.

The province as agri-based economy is presently confronted with low production and poor quality of agricultural products. This problem is caused by high cost of inputs, poor technology adoption, and laxity of policy implementation.

Some other factors that affect low productivity are watershed denudation caused by illegal logging, and flash floods that damage the farming community during strong rainfall. The human factor also contributes to the inefficiencies in production because of the lack of knowledge in agricultural production management. Generally, farmers rely upon "hit and miss" farming practices. The absence of agricultural support services in the locality discourages farmers' interests. It was also observed that human control over the productive capacity of land is given less importance; rather, most farmers rely mainly upon environmental factors, due to the lack of technology, fertilizer inputs, pesticides, and the like. (Sunny Apostol de Guzman)

b. Major stakeholders

The major stakeholders of this study include first and foremost the Provincial Government, Department of Agriculture, the Municipal Government, students taking agricultural course and the farmers.

c. Objectives

1. To develop agricultural production in Sulu as a means to improving economic growth.
2. To equip the farmers with the new technologies and their uses.
3. To generate more income for the farmers and create job opportunities for the people.
4. To develop in the agriculture students the knowledge and skills of the new technologies and serve as an agent of the development.

d. Measure of effectiveness

Given the chance for this policy to be implemented this will surely be of help in improving the agricultural production in the sense that the crops will produce more harvest and provide the farmers sufficient income. In measuring the effectiveness, this can be done by checking the reports or evaluation consolidated by team including the Department of Agriculture, local government unit, organization of the farmers, and the member institutions.

e. Potential problems and solutions

The problem that I cited for now is the denial of the administration to establish such a program as to improving agriculture because of no effective land use development policy of the provincial government. Improving agricultural production is not actually a priority program. The proper way of solving this

problem is to utilize effectively the Sulu's potential agricultural land and increase seedling production by establishing more nurseries.

V. Potential Alternatives

a. Description of alternatives

1. Reactivation of the project of the Former Gov. of Sulu Benjamin Loong entitled "From arms to farms, from tank to tractors and, from guns to bolos." *According to then Governor Loong, the Arms to Farms project began when the province of Sulu applied for a loan with the Land Bank of the Philippines (LBP) to purchase tractors, farming equipment and planting materials to be distributed to MNLF rebels who were interested to "turn a new leaf" in exchange for their weapons*. (With the reactivation of this program it must be noted that this will not only carry out MNLF returnees moreover this will prioritize the local farmers.) *Loong said that due to the wide acceptance of the Arms to Farms Program, the poverty incidence in the province composed of 157 islands and islets with a population of 619,000 residents, has gone down from 67% to 47%*.
2. Strengthening R.A. 8435. An Act prescribing urgent related measures to modernize the agriculture and fisheries sectors of the country in order to enhance their profitability and prepare said sectors for the challenges of globalization through an adequate, focused and rational delivery of necessary support services, appropriating funds and for other purposes.

b. Agriculture and Fishery Modernization Plan

Modernizing the agriculture and fishery industry is the pre-requisite for the industrialization of the Philippines. Its purpose is not only to increase the income of the farmers but also to ensure food security for the country. The process of modernization is to introduce technology as the approach to maximize production. There are two strategies which the government has introduced – the promotion of agrarian reform and the coastal resource management. Agrarian reform comprises four components such as the improvement of farm to market roads, financial loans to the farmers, distribution of lands to the farmers and providing technical advice to the farmers including organizing the farmers into cooperative movement. Until the present, the government still continues to push the agrarian reform.

Coastal resource management is designed to organize the fishermen and to protect the environment whereby the people living in coastal area are taught to preserve marine resources up to three kilometers from the shore and the inland resources particularly mangrove forest up to three kilometers to the interior. It is "about the sustainable use and management of coastal resources through planning, implementing and monitoring the sustainable use of coastal resources." (Internet Post) It is now widely applied in the Philippines as a basic local government service aimed at building the capacity of the fisher folk to manage marine resources for sustainable development. Coastal resources include "islands, transitional and intertidal areas, salt marshes, wetlands, floodplains, estuaries, beaches, dunes, barrier islands and coral reefs as well as fish and wildlife and their respective habitats within these areas." (Internet Post).

Coastal resource management is very relevant to Sulu because of its archipelagic nature which is rich in white beaches, mangrove forests, coral reefs and variety of fishes.

On legislative strategy, the government established the Land Bank of the Philippines for the purpose of assessing the farmers of their financial needs. The Land Bank of the Philippines, shall, in accordance with its original mandate, focus primarily on plans and programs in relation to the financing of agrarian reform and the delivery of 24 credit services to the agriculture and fisheries sectors, especially to small farmers and fisherfolk.

The Department of Agriculture shall coordinate with the Bureau of Post-Harvest for Research and Extension and the Post-Harvest Horticulture, Training and Research Center of the University of the Philippines Los Baños, to identify appropriate post-harvest facilities and technology needed to enhance agriculture and fisheries development in the area. It also gives priority to the development and promotion of appropriate agricultural machinery and other agricultural mechanization technologies to enhance agricultural mechanization in the countryside.

Educating the farmers through the help of the agriculture students to serve as their practicum including conducting seminars for the farmers is the primary role of the university. Since the objective of the College of Agriculture in Sulu is to impart knowledge concerning agriculture and taking into account the new technical skills to the students as well as to the Tausug people I believed that one way of imparting said skills is through educating the farmers with the right planting method and the use of new technologies that will somehow help in overcoming the problem of poor harvest. Because it is noted that through the correct use of fertilizers, proper training in running tractors and other machines use in farming the problem of low-income farmers will be addressed. This will be made by the students as their practicum; they will be going to the different municipalities for immersion as well as for training of the farmers.

Future Impact

As to the future consequences of the enumerated alternatives, I have identified the following: Talking about the first one which is the reactivation of former Governor Loong's program somehow conforms to the provisions of the R.A. 8435 although it focuses on the MNLF rebels. As of my suggestion in prioritizing the farmers in the different municipalities is a positive project that would benefit many people. But then since its name is "From arms to farms, from tank to tractors and from guns to bolos" it would simply tell us that it is mainly for the said MNLF members. Since the researcher has already gone through many researches on this matter she also encountered some reports that tackled about people who are not MNLF members but are part of the beneficiaries of the program. It is only a matter of the name or title, I guess for it to be less confusing title should be changed but the merit is the same.

For the second one, strengthening the R.A. 8435 connotes no consequences at all only the full attachment of the administration has to be stronger to make the said Republic Act more relevant to the people in Sulu. It should be dealt by any administration taking the office. If one administration has gone the successor

should continue because if he will not continue it will result in the total disruption of the programs which are already in place.

As to the third one I believed that it would not hinder the R.A. 8435 to be less implemented because students are going to be the partner of the government in improving agriculture.

Constraints and Political Feasibility

In the first alternative its political stability is low due to the fact that there is already a change of administration and it is believed that every administration has its own programs and projects to be implemented.

In the second alternative strengthening R.A. 8435 is much feasible than the first one since it is a mandate of every office to follow existing rules in order to be effective. But the only problem is the implementation. There should be a strict implementation of the said law to make it more effective and efficient.

The last one which includes the help of the agriculture students of course through the institutions they belong is also feasible because it would also be of help for the students to experience hands on in farming activities. Their knowledge will not be limited only to a small area instead they will be dealing with wider scope.

a. Policy Recommendation

Having identified the problems of agricultural production in the area, improved farming methods are needed. There is a need to improve production through better managements of inputs such as fertilizer, pesticides, technology and higher yielding varieties/stocks, among others. Strong government support is needed for marketing service and infrastructure development/improvement, and in providing farmers with the technical know-how in agricultural technology and management.

b. Preferred Policy

After all the data gathered for the three mentioned alternatives as well as the arguments made the researcher found out that the preferred alternative is strengthening R.A 8345, an Act prescribing urgent related measures to modernize the agriculture and fisheries sectors of the country in order to enhance their profitability and prepare said sectors for the challenges of globalization through an adequate, focused and rational delivery of necessary support services, appropriating funds and for other purposes.

But the focus of this study is mainly on agriculture. The researcher also believes that problems can be solved through combination of solutions. With that I suggest that this preferred policy should be coupled with the last alternative which is the “Information education campaign to the farmers” through the involvement of the students taking up agricultural courses especially those who are in their 4th year term that will also serve as their internship or practicum in the farms of the local farmers.

c. Strategies

The provincial administration should advocate the program on developing agricultural production through the use of technical facilities and information education campaign to the farmers. The administration can get the support of the Land Bank of the Philippines which has a loan program package for the farmers. This fund is an additional budget aside from the fund of the Department of Agriculture. Granting loan to the farmers is part of the mandate of the R.A. 8345. With that loan, the farmers can purchase materials, facilities and equipment they need. Of course, the provincial government will monitor the project. In addition, the administration will have to coordinate with the Department of Agriculture which serves as a partner agency in bridging communication with the farmers.

This program will focus on the following:

1. Educating the farmers with the technical know-how on coco-based processing. There should be a strong partnership of the government with the BJ Coco Mill on the matter of Press Mechanical Process and advance oil extraction technology. The said Coco Mill will coordinate with the farmers and educate the latter about the procedure. This will not actually lead to competition because the Coco Mill will also profit in a way that they will receive payment from the government and the factory will serve as the central processing of the coco oil in the province of Sulu. This is somewhat a way of developing the BJ Coco Mill as well.
2. Providing the farmers with driers and chipping machine for the cassava in order to improve cassava production. Cassava stalks should be made available to all farmers. The local government should also facilitate the market of the local produce such as establishing marketing tie-up with the private sector.
3. Rehabilitating the Communal Irrigation Projects (CIPs) for the irrigation of the farm lands especially rice fields as well as the Small Water Impounding Projects (SWIP) since it is no longer functional. The local government of the municipality where the CIPs and SWIP is located should coordinate with the team designated by the provincial government so that this will be made possible.
4. Since the main problems were already tackled and hope to be materialized we may now tackle the information education campaign. The team designated by the provincial government/Department of Agriculture and the partner institutions like MSU-Sulu and Sulu State College should enter into a memorandum of agreement on the basis of partnership. The 4th year intern students will have the opportunity to undergo training on the use of equipment and in turn they can educate the local farmers. They will be assigned to different municipalities and dwell with the farmers. They will be graded accordingly. The students will educate the farmers the right way of planting and the correct way of using fertilizers. Planting and harvesting method will be the coverage of this campaign.
5. Seminars should be also conducted by the Department of Agriculture to the local farmers.

CONCLUSION

The acceleration of the modernization of the agriculture and fishery industry is the responsibility of the local government. Investing more on technology transfer and improving the productivity of the farmers is the practical approach to spur economic growth in Sulu. The local government along with the field agencies of the national government and the academic institutions is the right agency to spearhead in the modernization program. Without enhancing the skills of the local farmers and technology investment there can be no economic growth.

The good example was the "Tank to farm, arms to bolos Program" of the former Governor Benjamin T. Loong aimed to improve the system of farming by encouraging the rural folk to engage in agriculture. This program brought 20 tractors to the farm and provided the farmers with free cassava stalk. It had worked and created awareness that wealth and livelihood lie on the ability of the Tausug to modernize their agricultural and fishery industry.

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