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STRATEGY OF SUPPLY OF SOYBEAN SEEDS INTER SEASON AND PRODUCTION AREA IN ACEH PROVINCE

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ABSTRACT

Seeds become one of the main factors determining success in crop cultivation. The use of quality seeds can produce soybean crops if followed by good agronomic treatment. This study aims to understand the strategy; Food Crops Hall encourages inter-field seed systems between seasons; And regulates the distribution of certified, evenly distributed seeds between field and inter-season for all of Aceh. This research was conducted by survey method with 36 samples of 3 field observation units and 12 soybean seed breeders in three areas of soybean development. The results showed that proram of soybean seed tissue between field of atar season has not been consistently done in three development areas (Field 1, Field 2 and Field 3). Seed production capability for seed supply in three areas above average is only 27.6 percent of the seed requirement in accordance with the target and realization of planting in 2012 until 2016. The results of this study using the network of seeds between field and inter-season in the year 2015 only 32 tons which is intended for the location of stabilization production of 640 Ha in Kab. Pidie, Pidie Jaya and Kab. East Aceh. Jabalsim of soybean seeds in Aceh is small (27.6%) has met the needs of inter-season seeds, but has not been able to distribute on time inter-field. The pattern of production of jabalsim soybean seeds in Field 1 of 93.5 percent has followed the soybean cropping pattern, so as to meet the needs of soybean seeds in this region. In contrast to the production patterns of Lapang 2 and Lapang 3, only 6.5 percent of the seed needs are met, the shortage is imported from outside the region.

KEYWORDS

INTRODUCTION

Seeds are one of the main factors that determine the success of crop cultivation. High quality seeds play a role in increased agricultural production.However, although the national seed program has been running for about 30 years, the availability of certified seeds has not yet reached its potential supply (IDA, 2000). One of the reasons for the low level of availability of high quality seeds is due to the lack of awareness of farmers to use high quality seeds ((Hazra A.K., et all, 2016.).

Generally, farmers will set aside part of their crops to be used as seeds for the next planting season. However, the seeds' quality are highly likely not guaranteed. This is because farmers can not afford to buy seeds that are considered expensive. Moreover, there is a decrease in the farmers' trust in certified seeds' quality in which often there has been inconsistent results between the label contentsand the real outputs. This eventually raises a number of problems such as waste of state foreign exchange, which perhaps can be shifted to supervise the quality of seeds circulating in the community (Department of Agriculture, 1987).

The importance of seeds in crop cultivation is very high. According to FAO, the increase in other varieties and slump in production by about 2.6% per generation of crops are the results of the use of poor quality-controlled seeds.The use of quality seeds can reduce the risk of cultivation failure as they are free from pests and diseases, and plants will be able to grow well in less favorable land conditions and other growing factors (Wirawan and Wahyuni, 2002;). Quality seeds allow good and quality crop production provided that there are good agronomic treatments and balanced technological inputs. In contrast, if the seeds used are of poor quality, the crop production will be of low quality or not any better than that of good quality seeds. The quality seeds are expected to reduce various risk factors of crop failure.

Further, the quality seeds are one of the main elements of agricultural efforts to increase crop production because without utilizing superior quality seeds, the application of other production facilities will be less useful and can even cause lossesto farmers (Almekinders, et all, 1994.).Therefore, the quality seeds not only can helpraise the quantity of crop production, but they can also improve the crop quality of which later can produce high quality seeds.In order to increase the production and productivity of food crops, especially soybeans, having quality seeds continues to be encouraged to meet the demand for these commodities i.e., for consumption, feed, and industrial raw materials, so as to suppress the import rate of these commodities.

To meet the needs of certified quality seed varieties, it is necessary to develop the production of palawija(fallow-season crop) seeds at BLUD BalaiBenihTanamanPangan Aceh (Aceh Food Crops Seed Agency) as the source for extension seed (ES)production and for the development of improved varieties for the needs of the seed users.The use of quality seeds from improved varieties has a decisive role in an attempt to raise the production of food crops because these seeds will help gain several advantages such as increasing the production of crop units and time, increasing the intensity of the crop, improving the quality of crop yields, and becoming a controlling device for pests and diseases.

Aceh province has a vast land area with a potential to develop a wide range of commodities of food crops and palawijacrops of 193,493 Ha (BPS, 2010). To support the aforementioned, various efforts have been implemented and will continue to be pursued so that a variety of commodities of food crops can grow and develop well and provide optimal production results. To improve the availability of quality seeds, it is important to propagate and develop seeds whose implementation requires programmed, focused, integrated and continuous handling from upstream to downstream, ranging from seed propagation of the breeding seeds, foundation seeds, stock seeds and extension seeds of soybeans.

For multi-functional national interests, it has long been recognized that domestic soybean production should be encouraged and maintained so that it will no longer depend on imports. The key points are on the mastery and the development of technology, ranging from superior varieties that are appropriate in agroclimatic, cultivation, post-harvest, processing and other supporting aspects such as marketing and infrastructures,among others. In the last two decades, technological development and mastery have rapidly increased, particularly with regard to improved varieties and cultivation technology.

However, in reality, the production tends to decline whilethe dependence on imports with all the negative impacts has greatly soared (Bal, S.S. & K.L., Rajbhandary, 1987).. In 2007, theimports reached 1.3 million tons or twice the domestic production. In fact, the Agricultural Research and Development Agency has been quite

productive, producing more than 60 varieties of soybeans with the level of productivity and various utilities that can compete with theimporting countries. There have been technological devices of production for various agroecosystems that are dominant for the development/expansion of planting areas in Indonesia. Among them are soybean cultivation technology packages for acid dry lands, wetlands, tidal lands, and integrated crop management technology (PTT).

Superior varieties are the key to increasing the production. However, as stated by the Head of the Agricultural Research and Development Agency, Dr. Ahmad Suryanaat the beginning of this year, the success of the development of superior varieties was also determined by other factors especially by the availability of seeds and the seed quality itself: "The use of high quality seeds is a key prerequisite in the inter-seasonal inter-regional palawija development strategy."

To achieve the purpose of seed propagation, DIPA APBN (State Revenue and Expenditure Budget) of2016 Fiscal Yearhas provided funds for Food CropSeedingwhich has been implemented through the Improvement of Food Security Program (Agriculture/Plantation).It is expected that the propagation and the development activities will not only be supported by the APBN (for Deconcentration Fund) which has limited funding, but also bythe APBA (Aceh Revenue and Expenditure Budget).

The purposes of this study were to understand and to figure out the strategies in the process of developing inter-fieldinter-season palawija seeds in Aceh. More specifically, the purposes of this study are as follows:

1) To understand the strategies: Food Crops Seed Agency has encouraged inter-field inter-season seeding system
2) To study the possibility of seed propagationat Food Crops Seed Agency thatcan regulate the dissemination of certified seeds that are evenly distributed between fields and between seasonsthroughout Aceh.

In general, the improved varieties of palawija seeding have been produced through several programs and activities, among others:

1. thedomestic variety breeding program;
2. the utilization and development of national germplasms; and
3. theintroduction of potential lines/varieties from abroad.

Plant breeding activities are not only directed to produce new improved varieties, but also to maintain the purity of existing varieties. Breeding and crop research activities are carried out by the Technical Implementation Unit (UPT) of Food Crops Research Agency. The UPT in theFood Crops Research Agency is a central government institution located in the local regions which includesIndonesian Center for Rice Research in Sukamandi, West Java; Indonesian Legumes and Tuber Crops Research Institutein Kendal Payak, Malang, East Java; Indonesian Cereals Research Institute in Maros, South Sulawesi, and Tungro Diseases Research Station in Lanrang, South Sulawesi.

The research centers are responsible for the availability of Breeder Seeds of the varieties produced in accordance with the legislation in force. Plant breeding is also carried out by multinational private companies that already have research installations and are expected to continue to develop.In addition to the market mechanisms, the provision of seeds is also more efficient when implemented with the inter-season and inter-field system. As a reference in the production of inter-season and inter-field seeds, they include: (a) the plan of planting areas of soybean per planting season, (b) theneed of soybean seeds per planting season, (c) the availability of district soybean seeds; and (d) the plan of seed procurement of the Seed Production Center (BBI).

The management of foods crops in the production areas can be done in wetlands orterrestrial lands. The wetland (field) system has traditionally been able to maintain the sustainability of the lands whilst providing the yields to its management. This has always been our farmers' desires. Therefore, it is considered imperfect for our homeland farmers' status if they are not yet able to manage both wetlands and terrestrial lands. Yet, it is viewed that the income from terrestrial lands is better earned. So,it is unsurprising that the combination of terrestrial and wetfields is a coveted pattern and is endeavored to be developed by many. The inter-field seed traffic model for crops is always associated with a pattern that seems to have been established for our regions. Our climate conditions has strongly supportedthis pattern. This means that paddy management in wetlands is done in the rainy season and palawija crops in the dry season. As for thepalawija crops on terrestrial lands are done in the rainy season.

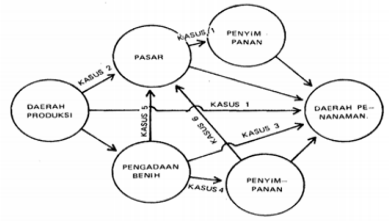

Figure 1. Procurement of Inter-Field Inter-Season Palawija Seeds

One of the factors affecting the success ofthe technical cultivation of soybeans isthe seeds. The role of seeds determines the production up to 95%. Seed propagation system in food crops (paddy andpalawija) is the multificationof seeds with one-generation flow by the private. However, some constraints include rapid growth decline,relatively short label life, limited availability and not timely of breeder seeds, many breeding areas pass off for the breeding field, yet not turned into proper seeds, and seed processing usually at the farmer level (internal). One Generation Flow is the method in which the generation of breederseed propagationto produce stock seeds is the same, which means that there are two generations in the propagation of breeder seeds to foundation seeds and one generation in the propagation of foundation seeds to stock seeds. However, in the stock seeds to extension seeds propagation there is a difference between the two groups of plants i.e., only one generation for rice seeds and up to four times for nut seeds (Mugnisyah, 1998).The soybean seeding system is carried out by the government (SOE), yet very little is correctly implemented while the price difference between the seeds and the consumed soybean is relatively small (BPSB, 1999).

The one generation flow system has been applied till these days. In addition, the pattern of seed distribution with the JABAL (Inter-field Seed Flow) system has begun to be implemented primarily for soybean crops although less successful. In the JABAL system, the provision of seeds is attempted by propagating the seeds produced at a particular location at a certain season in another location or the same location in the next season, either in paddy fields or moorings (Mugnisyah, 1998). However, there remains evidence that many states and localities prefer traditional industrial recruitment efforts and that local and state entrepreneurial efforts may be less coordinated (Lori et.all, 2012) JABAL can be done in a land with different planting seasons, between farmer groups, and as a source of seeds developed from pink label seeds to the fourth seed generation. However, the seed produced should not be stored for more than three months before being propagated again. This is because the farmers find it difficult to obtain quality soybean seeds. Soybean seeds that the farmers harvested are difficult to sustain untilthe next planting season because the soybean properties are not durable in storage (more than 3 months) resulting in the decline in the germination rate.

From the writer's previous observations and experiences, soybean cultivation technique was highly determined by the availability of water, fromboth the irrigation water and the rain water. The soybean cultivation in Aceh was generally conducted in March (Planting Season (MT II). The soybean planting during the dry season of May-June (Planting Season III) was mostly done by the farmers in Aceh with irrigated rice fields while in the rainy season (Planting Season I) in October-November, many farmers did not plant soybeans due to high rainfall.

The results of the study on the growth and production of 8 varieties of soybeans were a further study from the previous study on the growth and production of 6 soybean varieties conducted in irrigated rice fields in June-September. The two studies conducted at different planting seasons are the first step to determine/select the suitable and best varieties for production. It is expected that from those two locations, there are good seeds which can used in the JABAL system. On the issue of providing quality soybean seeds, relevant experiments need to be carried out to apply the JABAL system asa way to overcome the problems of seed availability. The reason is because JABAL can be applied to different lands, characterized by different planting seasons in different areas or conducted by different farmer groups in different

regions. Both areas of planting can be established by the seed procurement system of JABAL.

Research by the Food Security Agency of North Sumatera Province (2013) concerning the strategiesto increase soybean production was conducted by identifying the internal and external factors related to soybeans in LangkatDistrict. The identification of the internal and external factors was investigated by using SWOT analysis. After the alternatives were obtained, the strategies were first analyzed and evaluated prior to planning to implement these strategies. Then, the strategic plan of increasing the soybean production of LangkatDistrictwas established in accordance with Langkatconditions.

Hazra A.K (2016) found that the distribution of soybean seeds between fields had several advantages such as the guarantee of healthy seed procurement with longer dormancy period. As such, the time span between seed production and designation in the next planting season would be more assured.

RESEARCH METHOD

This study was conducted in three development areas of soybean seeds ofKeumala Aceh Food Crops Seed Agency. Three areas of soybean development in Aceh Province were divided into: Field 1, Field 2, and Field 3. Field 1 areas included: Aceh Besar District, Pidie District, Pidie Jaya District, Bireuen District, and Central Aceh District. Field 2 areas consisted of: North Aceh District, East Aceh District, and Aceh Tamiang District. Field 3 areas consisted of Aceh Jaya District, West Aceh District, Nagan Raya District, Southwest Aceh District, and South Aceh District. The objects of the study were theassisted farmers ofKeumala Food Crops Seed Agency, BII Keumala, and Production Department of Aceh Food CropsAgriculture Office.

The scope of this study was the procurement system of soybean seeds, the distribution and development of soybean seeds in the areas of consolidation, development, and new growth. Further, it also included the inter-field and inter-season procurement of soybean seeds to support the rise of soybean production, as the target of Soybean Road Map in Aceh and the target of working contract of Keumala Food Crops Seed Agency.

The types of data used in this study included primary data which were obtained through direct interviews with the assisted farmers, Head of Production Department of Aceh Food Crops Office, Head of the Agency, and staff atKeumala Agency. The interview was conducted with a pre-prepared list of questions. To complement the primary data, secondary data were taken from journals, library research, and various agencies related to this study.

Population was all seeds of palawija. Thestudy used survey, observation and direct interview with the farmers. Sampling method used was stratified random samplingby which every farmer was first stratified in three subpopulationsof each field area. The total population in the three fields was 58. The number of samples is shown in Table 1 below.

District	Population	Sample (20%)
Field I	**41**	**8**
Field II	**10**	**2**
Field III	**7**	**2**
Aceh	58	12

However, in this study the observation unit was divided into 3 planting seasons; therefore, the total unit of analysis was 3 x 12, resulting in 36 units of observation. In other words, each sample farmer had three replications of dry season 1 (MK 1), dry season 2 (MK2), and rainy season 1 (Mh1).

The analysis model used in this study wasrelevant with the needs of hypothesis analysis and testing of hypotheses (1) and (2). In the hypothesis (1) analysis of seed procurement strategy using inter-field and inter-season (Jabalsim) system, the SWOT analysis was used. SWOT analysis is an instrument used to perform strategic analysis. This is an effective tool in helping to structure the problems,especially by analyzing the strategic environment commonly referred to as the internal environment and the external environment. The right strategy is based on the ability to identify itself and its environment, so that the strategy can actually be materialized from the strengths it has and the opportunities it faces. In this case, the precise analysis in strategizing is the SWOT analysis. The most important activity in the SWOT analysis process is to understand all the information in a case, analyze the situation to find out what issues are occurring, and decide what actions should be taken to solve the problems (Rangkuti, 2001). SWOT stands for strengths, weaknesses, opportunities, and threats.

The definitions of the SWOT analysis are as follows: 1) strengths are resources, skills, or other advantages relative to competitors and the needs of an enterprise's market; 2) weaknesses are the limitations in natural resources, and skills and abilities that seriously hinder the effective performance of a company; 3) opportunities are favorable situations/trends in a corporate environment; and 4) threats are major unfavorable situations/trends in the corporate environment.

In this SWOT analysis, the dimensions and variables of the internal and external factors were interpreted. The internal factors which were the advantages of Jabalsim became the strengths and those makingthe program lacking became the weaknesses. Further, the external factors that succeeded the Jabalsim program became the opportunities while those hampering the program became the threats. The IFAS and EFAS analyses willresult in a strategy of mobilizing theJabalsim and becoming the direction of the program in the future.

In the hypothesis (2) analysis, the multiple regression was utilized which measured the consistency of the provision of soybean seeds inter-field and inter-season (Jabalsim) in Aceh. The formula of the proposed regression is as follows:

$$Qbam = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

In which:

Qbam: The average needs of seeds inter-season inter-field

X_1: Rainy season2 seed needs inter-field

X_2: Dry season1 seed needs inter-field

X_3: Dry season2 seed needs inter-field

X_4: Rainy season1 seed needs inter-field

RESULTS AND DISCUSSION

Jabalsim Soybean Development Area in Aceh

Since 2004 Aceh has been no longer a major soybean development area in Indonesia. However, Aceh, in fact, is quite potential to become a large soybean development area having thewetlands and dry lands of 1,024,000 hectares. Nevertheless, Aceh is still a buffer zone of soybean production as programmed by UPSUS Pajale (Special efforts to increase rice, corn and soybean production). During the last 5 years, the soybean cultivation area in Aceh was grouped into three categories: (1) consolidation areas, (2) development areas, and (3) new growth areas. Still, in these five years of soybean cultivation, the development of soybean cultivation in Aceh had experienced ups and downs, as shown in Table 2 below.

Table 2 Target and Realization of Soybean Cultivation in Aceh in 2012 – 2017

No	Description	Planting Area Size by Year				
		2012	2013	2014	2015	2016
1	Target (Road Map)	65,058	71,564	72,522	82,256	83,071
2	Realization	51,440	45,027	42,784	32,796	36,076
3	Difference	13,618	26,537	29,738	49,460	46,995

The above table shows that over time the more inadequate Aceh to realize the target areas of soybean cultivation as the roadmap had projected. The gap in production outputs emerged due to the lack of new development and growth areas in the acceleration program of increasing soybean production. Based on the area division, the consolidation areashad become the main cultivation areas of soybeans while the new development and growth areas were mostly inconsistent in planting soybeans.

Most consolidation areas were in the areas of Field 1 and Field 2 covering the Districts of Aceh Tamiang, East Aceh, North Aceh, Bireuen, Pidie, and Pidie Jaya. The development areas were in the Districts of Great Aceh, Central Aceh, and Aceh Jaya. The new growth areas were in the Districts of South Aceh, Southwest Aceh, and Singkil. However, the new development areas in Field 3 had not consistently planted soybeans. The lack of community consistency in the new development and growth areas was largely due to the lack of superior seeds availability with high yielding level.

In the UPSUS Pajale program, the development of soybean cultivation

area is directed to wetlands, dry lands (mooring), new open lands, and tidal lands. In details, the opportunities for the addition of soybean harvest area are as follows:

1. Wetlands in MK II (July-October) thatare usuallydivided as in Field 1 (Aceh Tamiang District, East Aceh District, and North Aceh District.
2. Rainfed rice fields in MK I (March-June), in the beginning of the rainy season before planting rice as in some areas of Field 1 and Field 2 (Districts ofBireuen, Pidie, Pidie Jaya, and Great Aceh).
3. Dry lands (mooring) at MH I (October-January) or MH II (February-March), especially in the area of Field 3 (Districts of Aceh Jaya, West Aceh, Nagan Raya, Southwest Aceh, and South Aceh.
4. Unplanted fields in all areas of Field 1, Field 2, and Field 3.
5. Intercropping on the rejuvenation land of Perhutani.
6. Intercropping with corn on the plantation area in Field 3 area.
7. New opening lands, formerly reed areas, especially in Great Aceh, East Aceh, and North Aceh Districts.
8. Reclaimed tidal lands, mostly in South Aceh District.

For optimal production, soybean plants require soils with a clay or turbid texture, medium-depth solum, medium-well drainage, medium-high NPK nutrients and micro elements, and soil pH 5.6-6.9. Suitable soil types for soybeans are Alluvial, Regosol, Andosol, Latosol, Grumusol, and Ultisol/Oxisol with lime, phosphate, and organic materials. Reclaimed peatlands are also suitable for soybean crops. In accordance with the recommendations of BPTP Aceh, the soybean development areas in the above three fields are suitable for soybean cultivation.

Needs and Production of Soybean Seeds

The needs of soybean seeds were estimated on the basis of the target and realization of planting soybean areas for the last five years (2012 to 2017).

Table 3. Needs and Production of Soybean Seeds in Aceh from 2012 to 2017

No	Description	Needs and Production of Soybean Seeds (ton)				
		2012	2013	2014	2015	2016
1	Target (Road Map)	3,253	3,578	3,626	4,113	4,154
2	Realization	2,572	2,251	2,139	1,640	1,804
3.	Seed Production	229	688	497	115	1,229
4.	Keumala Seed Agency	64	88	64	32	280
5.	Difference	2,278	1,475	1,579	1,493	295

Source: Aceh Food Crops Agriculture Office (2017)

On the basis of the realization of soybean crops, most of the soybean seeds were not produced in Aceh either by seed breeder farmers, or by KemalaSeed Agency or by Main Seed Agency (BBU) in each district/city of soybean production centers. Most of the soybean seeds grown were seeds provided through procurement from outside Aceh and partly taken from the farmers' harvests.Derivative seeds taken from the farmers' harvests have the potential to decrease yields. Thus, crop productivity will decrease.

Results of research using inter-field and inter-season seeding in 2015 had only 32 tons dedicated to 640 hectares of production sites in Pidie, Pidie Jaya and East Aceh Districts. For the consolidation areas in North Aceh District, some of the soybean seeds were imported from North Sumatra and for Pidie and Pidie Jaya Districts most of the Jabalsimwere managed by the Breeder Farmer Group.

This study also found that the ability of seed production for the provision of seeds in three areas above was only 27.6 percent in average. TheKeumalaSeed Agency which was supposed to produce stock seeds could only supply 5.4 percent of the soybean seeds required. The results of interviews with the resource persons indicated that there were several problems in the provision of seeds, among others: (1) unavailability of land in the Kemala Seed Agency to propagatestock seeds; (2) lack of breeder resources that had the competence to propagate stock seeds; and (3) lack of coordinated soybean planting schedules in all consolidation areas, development areas, and new growth areas. These three issues had often caused lack of soybean seeds when needed, and at certain times the soybean seeds exceeded the required amount and expiredthe dormancy period.

Strategies of Soybean Seed Development of Jabalsim

The analysis was done with the IFE matrix, which was divided into three clusters with weighting and ranking to find their respective scores. The magnitude of weight and rank values was given by the respondents. The results are shown in the following table:

Table 4. IFE in Soybean Seed Development ofJabalsim

Question	a	b	c	D	e	f	g	Rating	Weight	Score
S1	4	5	4	3	5	5	4	4.3	0.051	0.22
S2	5	5	3	4	5	5	4	4.4	0.053	0.235
S3	4	5	5	4	4	3	3	4	0.048	0.192
S4	4	4	5	5	4	4	4	4.3	0.051	0.22
S5	4	5	5	4	5	5	5	4.7	0.056	0.266
S6	4	3	3	4	3	5	4	3.7	0.044	0.165
S7	3	5	4	3	4	5	4	4	0.048	0.192
Total								29.4	0.352	1.489
W1	2	1	3	1	3	2	2	2	0.024	0.048
W2	1	3	2	2	1	2	2	1.9	0.022	0.041
W3	1	1	2	2	1	2	1	1.4	0.017	0.024
W4	1	1	1	1	1	1	1	1.0	0.012	0.012
W5	1	1	2	2	1	2	2	1.6	0.019	0.029
W6	2	2	3	2	2	2	2	2.1	0.025	0.055
W7	2	1	2	1	2	2	1	1.6	0.019	0.029
Total								11.6	0.141	0.238
Difference										1.251

The results of IFE matrix analysis on the soybean seed development of Jabalsimindicated that the strengths as the priority factors included the consistency of quantity and quality of inter-field and inter-season soybean seeds. The amount of seed production was adjusted to the target of planting areas and the periods of soybean planting in MH2, MK1, MK2, and MH1. The quality of good soybean seeds was a major factor in the procurement of soybean seeds with a score of 0.266. The soybean seeds as the raw materials had a quality which followed the standard of the Ministry of Agriculture; therefore, this product was in a strong position in the fulfillment of soybean seed demand inter fields.

Table 5. EFE for Soybean Seed Development of Jabalsim

Question	a	b	c	d	E	f	g	Rating	Weight	Score
O1	4	5	5	4	4	4	4	4.3	0.051	0.219
O2	4	5	5	3	5	3	4	4.1	0.049	0.205
O3	3	4	5	4	5	5	4	4.3	0.051	0.219
O4	4	4	4	5	5	4	5	4.4	0.053	0.234
O5	4	3	5	5	5	5	5	4.6	0.055	0.250
O6	4	4	4	5	5	4	3	4.1	0.049	0.205
O7	4	4	4	4	4	4	4	4	0.048	0.191
Total								29.9	0.363	1.524
T1	2	1	3	3	1	1	2	1.9	0.022	0.041
T2	2	2	1	2	1	2	2	1.7	0.020	0.035
T3	1	1	3	2	1	1	2	1.6	0.019	0.029
T4	1	1	1	2	2	1	1	1.3	0.015	0.02
T5	1	2	1	1	1	1	1	1.1	0.014	0.016
T6	3	1	2	1	2	2	3	2	0.024	0.048
T7	1	2	2	1	2	2	2	1.7	0.020	0.035
Total								11.3	0.137	0.224
Difference										1.300

The results of EFE matrix analysis onJabalsim seed development showed that the opportunities as the priority factor for the development of soybean seeds included improving the quality of soybean seeds with the application of Good Agriculture Practice (GAP) with a score of 0.250. GAP is a structured technical cultivation activity. This activity ensures the cultivation of soybeans is well applied so as to produce high quality soybean seeds.

The Jabalsimsoybean development strategies can be divided into SO, ST, and WO strategies. These three strategies refer to the abovescores of the internal and external factors. The KeumalaSeed Agency has been mandated to produce soybean seeds throughout Aceh in order to succeed the special programs in accelerating the increase of rice, corn, and soybean production (UPSUSPajale). In general, the quality of soybean seed depends on the period of production and the dormancy

period of the seeds. The physical quality of the seeds is determined by the uniformity of seeds, moisture content, and percentage of defective seeds. On the other hand, the quality of seeds is determined by the purity of varities and the seed processing technology.

The KeumalaSeed Agency, which currently has 57 seed breeder farmers,was the partner of seed distribution in all soybean production centers. The procurement of the seeds,of course, encountered a number of threats and opportunities. Thus, the strategy discussion beganwith the strategies for utilizing strengths to seize opportunities (SO), strategies for utilizing strengths to deal with threats (ST), and strategies to fix weaknesses to capture opportunities for the development of soybean seeds. TheseSO, ST, and WO strategic descriptions can be explained systematically below.

Strategies in utilizing strenghts to exploit opportunities (S-O):
1. Utilizing the PAJALE Program to optimize the potential demand for quality soybean seeds in Aceh
2. Implementing Good Agriculture Practice (GAP) by organized farmers from Keumala Seed Agency, BBU and seed breeder farmers
3. Developing soybean production areas based on the potential of planting areas and the opportunity of soybean cultivation technology
4. Improving coordination with the provincial and district governments of soybean centers in the areas of Field 1, Field 2, and Field 3

Strategies in utilizing strengths to confront threats (S-T):
1. Creating high quality seeds in sufficient quantities for inter-season needs.
2. Utilizing superior varieties that have been adapted for the development of planting areas and intensification program
3. Utilizing a network of seed quality control to overcome soybean seed speculation.
4. Developing cooperation with organized farmers to reduce the number of poor quality soybean seeds in Aceh.

Strategies to fix weaknesses to capture opportunities (W-O):
1. Improving the handling of soybean seed yields in ongoing basis by applying Good Agriculture Practice (GAP)
2. Conducting a specific approach to get supports from the government for soybean development policy to overcome the problems of seed facilities in Keumala Seed Agency and simple seed processing technology
3. Improving integrated Jabalsim system so as to determineinter-field and inter-season needs adequately with affordable seed prices.

Season Influences onJabalsim Soybean Seed Production

The soybean planting season in Aceh is generally divided into four production rounds, starting from the rainy season two (MH2) from January to March, the dry season one (MK 1) from April to June, the dry season two (MK2) from July to September, and the rainy season one (MH1) from October to December. The seed needs in each production cycle of soybeans are shown in Figure 2.

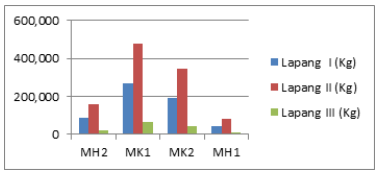

Figure 2. Inter-Field Inter-Season Soybean Seed Needs in Aceh in 2016

The graphic above shows that the seed need in MK 1 was the highest and continued to decrease steadily until the beginning of MH1. In MH 1 and MH 2, thefarmers preferred to plant paddy instead of soybeans. The profits of paddy field farming was much greater than those of soybean farming. During the last five years (2012 to 2017), cropping patterns and soybean seed needs were consistent in the development areas. In fact, the patterns of soybean production should have followed the above patterns. More details of the patterns of soybean seed production in Aceh between seasons are shown in Figure 3.

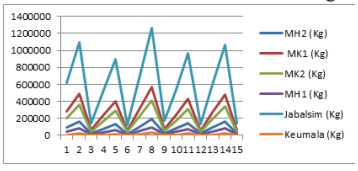

Figure 3. Inter-Season and Inter Field Procurement Performance of Soybean Seeds in Aceh

The results of regression analysis show that Jabalsim of soybean seeds in Aceh was consistent with inter-season, but not inter-field. The inter-field consistency was only in the dry season one (Mk1). In the model, it turned out that the needs for soybean seeds in all seasons were consistent with the production of soybeans by KeumalaSeed Agency and thebreeder farmers. The coefficient of determination in the model reached 93.5 percent indicating that the patterns ofJabalsim seed production had 93.5 percent followed the patterns of soybean cultivation. Only 6.5 percent of the production patterns were outside the model.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change
1	.967a	.935	.930	2155.39240	935	187.449

a. Predictors: (Constant), BenihAntarMusim
b. Dependent Variable: BenihKeumala

The analysis of variance of Jabalsimseed production also shows consistency with the soybean planting seasons as shown by Fcount of 187.449 which was bigger than Ftable (0.05;4/10) = 12.81.

ANOVA[b]

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	8.708E8	1	8.708E8	187.449	.000a
Residual	6.039E7	13	4645716.382		
Total	9.312E8	14			

a. Predictors: (Constant), BenihAntarMusim
b. Dependent Variable: BenihKeumala

Model		Unstandardize d Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-2384.505	1032.160		-2.310	.038	-4614.351	-154.658
	BenihAntarMusim	.020	.001	.967	13.691	.000	.017	.023

a. Dependent Variable: BenihKeumala

However,upon closer review, the most dominant production effects were on the rainy season one (MH1) and rainy season two (MH2).

Excluded Variables[b]

Excluded Variablesb							
Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
BenihMusim Hujan2	-3.654E4a	-2.466	.030	-.580	1.634E-11	6.119E10	1.634E-11
BenihMusim Kemarau1	1.650E4a	.164	.872	.047	5.329E-13	1.876E12	5.329E-13
BenihMusim Kemarau2	1.556E4a	.427	.677	.122	4.017E-12	2.489E11	4.017E-12
BenihMusim Hujan1	1.270E4a	1.571	.142	.413	6.853E-11	1.459E10	6.853E-11

a. Predictors in the Model: (Constant), BenihAntarMusim
b. Dependent Variable: BenihKeumala

Production of soybean seeds in MH2 was intended for the procurement of soybean seeds of planting season in MK1. In this season, the demand for soybean seeds had been very high, so Jabalsim has consistently produced the stock seeds and extension seeds of soybeans. In contrast, in MK2 there was no large scale production of soybean seeds due to low seed demand. The provision of seeds in the dry season two was only for the rainy planting season in the dry lands.

The targets of Jabalsim soybean seeds development were (i) the establishment of fair prices that could provide incentives for farmers to increase production, (ii) the establishment of strong marketing institutions at the farm level, (iii) the establishment of efficient marketing links that could provide benefits and increase farmers' income, and (iv) the development of industries using domestic soybean raw materials.

CONCLUSION AND SUGGESTIONS

Conclusion

In conclusion, the proram of inter-field inter-season soybean seeds has not been implemented consistently in three development areas (Field 1, Field 2, and Field 3). Seed production capability for seed supply in three areas above was only 27.6 percent in average of the seed requirement against the planting target and realizationfrom 2012 until 2016. The results of this study using the inter-field inter-season soybean seeds in 2015 obtained only 32 tons, which had been intended for the production consolidation locations of 640 Ha in Pidie, Pidie Jaya, and East Aceh.

Jabalsim of soybean seeds in Aceh has met the needs of inter-season seeds in a small number (27.6%), but has not been able to distribute on time for inter-field needs. The patterns of production of Jabalsim soybean seeds in Field 1 of 93.5 percent have followed the soybean cropping patterns, so as to meet the needs of soybean seeds in this region. In contrast,in the production patterns of Field 2 and Field 3, only 6.5 percent of the seed needs have been met while the shortage has been imported from outside the region.

Suggestions

There are several suggestions provided in this study: (1) It is recommended that the Government of Aceh (GoA), in this case the Agriculture Office, provides its own lands in order to facilitate the propagation of stock seeds. Also, the GoA should prepare qualified breeders adequately with appropriate disciplines that have the competence of producing stock seeds; (2) It is advisable to issue a regulation binding on cooperation between the Food Crops Seed Agency and the District Main Seed Agency, the Beneficiary Seed Agency, and private seed breeders; and (3) It is hoped thatsoybean planting schedules can be coordinated in all consolidation areas, development areas, and new growth areas so as not to cause shortage of seeds when needed, and at certain times the soybean seeds exceed the amount required to which later can expire the dormancy period.

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