

# The Impact of Agriculture Extension Partnership Model on Rice Seed Farmers in Aceh Province

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**Type:**

Research paper

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**Abstract:****Background**

The availability of locally superior seeds is an effort that is being pursued by the Indonesian government today by encouraging farmers to be seed producers (three thousand seed independent villages program). This effort is more oriented to empower the farmers and to apply the pattern of agricultural extension partnership by involving the government, universities, private and institutional level of farmers. This pattern further ensures the availability of locally superior seeds, making it cheaper and easily obtainable by farmers

**Material and methods**

This study uses qualitative research method by applying case study with qualitative descriptive approach in which data processing through non parametric static with data measurement using Likert Scale.

**Results**

The result shows that the role of partner in farmer extension model to rice seed farmers in sequence are; (1) institutional role of farmer level, (2) role of government, (3) role of universities, and (4) role of private organization toward seed availability in Aceh, Indonesia. In general, the impact of agriculture extension partnership scheme is felt good by rice seed farmer in Aceh Province Indonesia.

**Conclusions**

In particular the impact of the application of farming partnership pattern to each of rice seed farmer in sequence are as follows; (1) increased production (2) improvement of cultivation skills, (3) availability of locally superior seeds is considered very good by rice seed farmer, (4) group strengthening and (5) marketing production that is in good category.

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**Keywords:**

agricultural extension, partnership impact, rice seed farmer



level, (2) role of government, (3) role of universities, and (4) role of private organization toward seed availability in Aceh, Indonesia. In general, the impact of agriculture extension partnership scheme is felt good by rice seed farmer in Aceh Province Indonesia. In particular the impact of the application of farming partnership pattern to each of rice seed farmer in sequence are as follows; (1) increased production (2) improvement of cultivation skills, (3) availability of locally superior seeds is considered very good by rice seed farmer, (4) group strengthening and (5) marketing production that is in good category.

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## 1. Introduction

The agricultural sector contributes substantially to economic development, and can even trigger economic growth in Indonesia. In the future, the agricultural development is expected to contribute more in order to reduce the gap between the rich and the poor, expand employment opportunities, and able to take advantage of economic opportunities that occur as the impact of globalization and liberalization of the world economy.

Essentially, farmers are the main actors of agricultural development. Thus the success of agricultural development is more determined by the role of farmers themselves which in fact can not be separated from the guidance and assistance of the government and various institutions.

One of the ways that the governments and other institutions should do in empowering farmers is to develop agricultural extension. As stated by Elliot (2014), extension has

48 an important role in ensuring that agriculture develops and assume its rightful position in  
49 the arena of development at small scale and upcoming commercial farmers.

50 To achieve that goal, the forms of agricultural extension activities should  
51 involve implementing the training, strengthening farmer groups and planning and  
52 supervising extension programs. Burton and Mohamed (2002) stated that the main task of  
53 a public extension system should be human resource development that can equip  
54 medium and small-scale farmers to solve their own problems and respond to new  
55 opportunities.

56 Besides farmers, according to Arthur (1966), one of the main requirements in  
57 agricultural development is the ever-changing technology. Tesfamichael et al. (2017)  
58 assert that “adoption of improved agricultural technologies by smallholders is  
59 considered as the main pathway for breaking poverty trap”. It is also support that  
60 innovation plays an important role in agricultural development. Diffusion and adoption  
61 of innovation in a farming community is strongly influenced by the characteristics of  
62 the innovation it self. Everett (1983) argues that there are several characteristics of an  
63 innovation, namely: (1) relative advantage, (2) alignment, (3) complexity, (4) can be  
64 tried, and (5) can be observed.

65 Another important aspect that should be fulfilled in agricultural development is  
66 profesional extension. As stated by Elliot (2014), professionalism also affect  
67 agricultural extension in service delivery by creating demotivated cadres in agriculture.  
68 Catherine et al. (2017) also believe that communication is one of the most important  
69 aspects of effective extension delivery.

70 To achieve that goal, it is important to prepare materials, methods and media used in the  
71 implementation of agricultural extension. The attainment of the ultimate goal of

73 extension is largely determined by the material, method and accuracy of media usage by  
74 an extension workers (Sapar et al., 2012). Isaac et al. (2013) also argues that content and  
75 delivery methods in agricultural extension should be carefully selected and varied so  
76 that the desired results and programme objectives are achieved.

77 In addition, extension program face a lot of problems. Kurnia et al. (2010) for instance  
78 stated that the role of agricultural extension can only be felt by the farmer group  
79 members. Most time was spent for administrative activities compared with extension  
80 activities, as well as the burden of the targeted area reached 3-6 villages for each  
81 extension worker.

82 This condition requires an agricultural extension partnership system with various parties  
83 including universities, private organization, agricultural institutions at the farmer level.  
84 It aims to ease the burden and to connect between innovation producers and those who  
85 will distribute innovation to farmers and the certainty of the production market  
86 (Zulvera, et al., 2016).

87 Srinivasulu et al. (2016) argues that there is a need for government and development  
88 partners to promote and boost public-private partnerships that will ensure better access  
89 to inputs for production of certified seed, provide better access to extension services for  
90 smallholders, and increase revenues from certified seed production from farmer-led  
91 seed enterprises.

92 According to Gana and Stephen (2001); Burton and Mohamed (2002), partnerships will  
93 increase the effectiveness of empowerment to the community. The key to successful  
94 partnerships is complementary business. To achieve this complementarity there must be  
95 mutual understanding and respect for the strengths and weaknesses of each.

97 Based on this background, this study aims; (1) to know the role of partners  
98 (government, university, private, and farmer institutions) in agricultural extension, and  
99 (2) to know and analyzing the impact of the implementation of extension partnership  
100 model to rice farmer breeders in Aceh Province, Indonesia.

## 101 2. Material and methods

102 This research was conducted in Aceh Utara district of Aceh Province. The population of  
103 this research includes member of rice farmer group Gapoktan 'Sapue Pakat' who get  
104 farming extension partnership scheme program which involves the government,  
105 university (IPB and Unsyiah), private organization and farmer institution. The total  
106 population to be sampled in this study is 128 farmers.

107 The scope of the study is limited only to the role of partners (government, university,  
108 private organization and farmer institutions) and the impact of agricultural extension  
109 partnership models on rice seed farmers. Research object is member of rice farmer  
110 group Gapoktan 'Sapue Pakat' that give assessment to role of partnership in  
111 implementing agricultural extension for rice seed farmers.

112 To measure and analyze the role of partners (government, university, private  
113 organization and farmer institution) on seed farmers, the researcher calculate the  
114 average scoring through the role of each party include (1) government parties, (2)  
115 universities, 3) private organization and (4) institute at farmer level which further  
116 interpreted descriptive statistics analysis result.

117 Impact analysis of the application of farmers extension partnership pattern to seed  
118 farmers include indicator (1) improvement of farmer cultivation skills (2) strengthening  
119 farmer groups (3) increased production, (4) availability of locally superior seeds and (5)

121 marketing of products using score Likert that interpreted in the discussion. The  
122 questions were served in closed form by using the 5-point Likert Scale (namely strongly  
123 agree, agree, not sure, disagree and strongly disagree) in order to have affective  
124 responses.

### 125 3. Results and discussions

126 Implementation of partnership pattern for rice seed farmers in Aceh Province involves  
127 government, university, private organization and farmer institutions that each play a role  
128 in the success of the partnership pattern.

#### 129 3.1 The role of government in partnership agricultural extension

130 The role of government in agricultural extension partnerships includes; (1) supporting  
131 food sovereignty programs, (2) provision of production facilities and (3) increased  
132 production. The distribution of respondents' answers about the role of government in  
133 agricultural extension partnership can be seen in the Table 1.

134 Farmers felt that the role of local government is significant in providing production  
135 facilities such as purple label seeds of IPB 3S varieties, organic fertilizers and unorganic  
136 fertilizers (Urea, SP 36 and Ponskha).

137 Provision of production facilities from the local government through Food Security and  
138 Extension Services (BKPP) of North Aceh Regency is felt significant in increasing  
139 production yields. It can be seen that in the first seeding season, the seedlings get 8.4  
140 tons per hectare and the peasants who are not involved in the partnership program only  
141 produce 6.7 tons per hectare. This condition indicates that the role of this activity  
142 supports the food security and sovereignty program which was expected by the local

144 government as reflected in the Strategic Planning of North Aceh Regency and the  
145 Strategic Planning of BKPP in North Aceh Regency.

### 146 **3.2 The role of universities in partnership agricultural extension**

147 The role of universities in agricultural extension partnerships includes; (1) the  
148 implementation of the resulting innovation, (2) facilitation of technology transfer and  
149 (3) the dissemination of innovation results. The distribution of respondents' answers  
150 about the role of universities in partnership of agricultural extension can be seen in the  
151 table 2.

152 Extension partnership programs recognized by farmers and extension workers have  
153 assisted in the spread of superior seed innovations of IPB 3S varieties produced by plant  
154 breeding teams from the Bogor Agricultural Institute (IPB) and Optimum Production  
155 Technology Package (IPB-Prima). Efforts to ensure the application of the technology  
156 package is conducted by Agriculture Faculty of Syiah Kuala University and Agriculture  
157 Faculty of Malikussaleh University on the extension partnership program and  
158 agricultural fielding program. It involved six the last year bachelor and doctoral students  
159 who helped the process of innovation, extension and dissemination of innovation. In  
160 general, farmers at the majority of research apply a packet of cultivation technologies  
161 delivered by universities including the seeding process with the quickly seeds  
162 incubation period.

163 On the application of legowo row planting pattern , it is still found farmers who have  
164 not completely implemented row legowo pattern. Some reasons for applying row  
165 legowo (1) are more difficult in the process of planting, (2) the farmer assumes that  
166 there is a vacant part of the field that is not utilized for planting, (3) need a tool (rope)

168 with different sizes and difficult to find proficient labor of planting process with legowo  
169 jajar system.

170 Implementation of irrigation and fertilization system does not face many obstacles by  
171 introducing intermittent techniques and water draining 10 Days before harvest.  
172 Likewise, in the case of fertilization only time and volume of giving that not all seed  
173 farmer apply correctly. There is one kind of fertilizer recommended by Optimum  
174 Production Technology that is 1 liter / hectare silica fertilizer that is sprayed at age 14  
175 and 30 HST (Day Ready Planting) because farmer felt difficult to find it at agriculture  
176 shop in their environment.

177 University and farmers are also actively monitor to anticipate various diseases and pest  
178 attacks. Only snail attack and caterpillar attack perceived by farmers planting I and II.  
179 However, because it is quickly detected, the preventive and pest control efforts can be  
180 done well based on the information of the extension staff and escort on the  
181 University who always stay with the farmers in the research location. Implementation of  
182 harvest was done after 90% of paddy grain dries.

### 183 **3.3 Role of private partnership in agricultural extension**

184 The role of private organization in agricultural extension can be seen in the table  
185 3. Cooperation partnerships with private perceived benefits by farmers. It is in line  
186 Burton and Mohamed (2002) who writes “private sector firms and nongovernmental  
187 organizations (NGOs) have become important alternatives to public extension in  
188 providing technical inputs, information and training, and organizational support services  
189 to farmers and rural households”. Emmanuel et al. (2015) also report that farmer groups  
190 can be an important institution for the transformation of smallholder farming, increase  
191 productivity and incomes thereby reducing poverty.

193 The farmers perceived benefits because the production they earned get assurance of the  
194 parties that will accommodate and also get a better price. This is in accordance with the  
195 agreement between the farmer groups, with the private sector when following the  
196 Optimum Production technology package (IPB Prima) offered by the colleges that will  
197 conduct training and assistance during the partnership activities take place. Based on the  
198 observations of researchers before the hatchery program of 3B IPB varieties is  
199 implemented, farmers were promised higher prices Rp. 500/Kg compared to the  
200 prevailing market price at the time of harvest.

201 This partnership pattern is also benefited by farmers and the entrepreneur of seeds  
202 because of the availability of seeds from the breeders who have received training from  
203 the university and supervision from the government. Farmers also indirectly enjoy the  
204 share of marketing price of seeds managed by farmer groups whose profits can be used  
205 to increase the capital of Farmer Group 'Gapoktan Sapue Pakat' in North Aceh  
206 Regency.

### 207 **3.4 Role of farmer institution in agricultural extension partnership**

208 The role of farmer institutions in agricultural extension partnership includes; (1) the  
209 need for innovation to increase production, (2) implement the technology package, (3)  
210 the happening of input efficiency and the increase of production result. Distribution of  
211 respondents' answers about the role of farmer institutions in agricultural extension  
212 partnership can be seen in the table 4.

213 Based on the answers from the majority seed farmers, they still expect various  
214 innovations from institutional agriculture to increase production. Some of the  
215 innovations offered in agricultural extension partnership schemes involving local

217 government, university, private parties, and farmer institutions are perceived to be  
218 beneficial to farmers, both in terms of cultivation techniques that can reduce production  
219 costs and increase production and market certainty of production.

220 Increased efficiency starting from the use of seeds with the amount of 15 Kg able to  
221 meet the needs of seeds for 1 hectare which is based on the recognition of farmers  
222 before the introduction of cultivation technology IPB 3S for 1 (one) hectare require 30-  
223 35 Kg. Likewise in the use of Urea fertilizer which usually gives farmers up to 400 Kg  
224 but with Optimum production technology package (IPB-Prima) only required 150 up to  
225 200 Kg / hectare/MT. This illustrates the efficiency of production usage and based on  
226 observations in the field of rice production is also increasing for farmers applying  
227 technology packages offered by partners.

228 The Impactpattern partnership extensionon seed farmer can be seen on Table 5. It shows  
229 that the overall impact of applying farming extension partnership schemes to good  
230 effect for rice seed farmer in Aceh Province. Each indicator of the impact of the  
231 partnership pattern is instrumental in increasing the production. Before the extension  
232 partnership program, the yield of rice production averaged 5.8 Ton / hectare. After the  
233 implementation of partnership pattern and technology package there is a significant  
234 increase that is 7.5 Ton/ hectare. It is in line with Gana and Stephen (2001) who found  
235 that When GO, NGO or PO agencies engage in partnerships, their effectiveness is  
236 generally increased.

237 In addition, farmers also feel the impact of increasing skill ranging from land  
238 processing, seed seeding, cropping patterns, fertilization, pest and disease control, good  
239 harvesting and post harvest management activities to produce superior seeds.  
240 Implementation of agricultural extension partnership system is also felt positive impacts

242 by the farmers on the availability of certified seedlings that are easy to get and can be  
243 reached by farmers.

244 The pattern of agricultural extension partnership involving government, university,  
245 private and farmer institutions is not only conducting the cultivation innovation transfer  
246 process but also the strengthening the farmer group through entrepreneurship training  
247 activities and farmer groups management. This is felt by seed farmers of Sapue Pakat  
248 group members who become respondents in this study. The last level of agricultural  
249 extension partnership program impacts the existence of parties that accommodate the  
250 results of production in this case private company. This findings support Tesfamicheal  
251 et al.(2017) who found positive and significant effects of extension access  
252 and cooperative membership on technology adoption and household welfare.

253 Unfortunately, there are some agreements that the partner has not been able to be  
254 realized well, for example, the price of rice harvesting agreement processed into  
255 superior seeds. However, some farmers convey with the existence of partnership can at  
256 least answer the constraints of market availability and price certainty of rice produced  
257 by farmers.

#### 258 **4. Conclusion**

259 The role of partner (government, university, private organization and institutional at  
260 farmer level) in farmer extension model to rice sed farmer is significant. In sequence,  
261 based on the level, the role of the partners in the implementation of the partnership  
262 extension pattern is as follows (1) institutional role of farmer level, (2) role of  
263 government (3) role of universities, and (4) role of private party

265 In general, the impact of agriculture extension partnership scheme that is perceived by  
266 rice farmer in Aceh Province in sequence is as follows; (1) increased production and (2)  
267 improvement of cultivation skills, (3) availability of locally superior seeds is considered  
268 very good by farmers, while (4) group strengthening and (5) marketing of production  
269 are in good category.

270 It is imperative that the partners involved in the agricultural extension farming  
271 partnership model to empower the farmer to build commitments to carry out their  
272 respective duties and functions and to communicate well to support the success of the  
273 program. It is hoped that the government will promote this first extension partnership  
274 model and apply it to other locations in order to support the achievement of food  
275 security and sovereignty starting from the availability of locally superior seeds  
276 throughout Indonesia.

### 277 **Acknowledgement**

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Table 1

<b>The Role of Government</b>	<b>N</b>	<b>Min.</b>	<b>Max.</b>	<b>Mean</b>	<b>Std. Deviation</b>
Supporting Food Sovereignty Program	128	1	5	3.52	1.14
Provision of means of production	128	1	5	3.59	1.14
Increased Production	128	1	5	3.53	1.16
Valid N (listwise)	128			3.55	1.15

**Table 1.** Distribution of farmers' answers on the role of government in partnership agricultural extension

Table 2

<b>The Role of Higher Education</b>	<b>N</b>	<b>Min.</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Deviation</b>
Application of Innovation generated	128	1	5	3.52	1.02
Technology Transfer Assistance	128	1	5	3.45	0.98
Dissemination of Innovation Results	128	1	5	3.60	0.98
<b>Valid N (listwise)</b>	128			3,52	

**Table 2.** Distribution of farmers' answers on the role of universities in agricultural extension partnership

Table 3

<b>Role of Private Sector / Entrepreneur</b>	<b>N</b>	<b>Min.</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Deviation</b>
Availability of Superior Seeds for Marketed	128	1	5	3.50	1.06
Availability and certainty of production price	128	1	5	3.65	1.04
Share Price Marketing Seeds	128	1	5	3.49	1.05
<b>Valid N (listwise)</b>	128			3,52	

**Table 3.** Distribution of farmers' answer on the role of entrepreneurs/private partnership in agricultural extension

Table 4

Role of Farmer Institution	N	Min.	Max	Mean	Std. Deviation
Innovation need for increased production	128	2	5	3.62	0.96
Applying the Technology Package	128	2	5	3.57	1.00
The occurrence of input efficiency and increased production yield	128	1	5	3.57	1.03
<b>Valid N (listwise)</b>	128			3,59	

**Table 4.** Distribution of farmers' answers on the role of farmer institution in agricultural extension partnership

Table 5

No	Impact Pattern Partnership Extension	Index (%)	Interpretation
1	Improvement of cultivation skills	81.14	Very good
2	Strengthening farmer groups	73.24	Good
3	Increased production	83.37	Very good
4	Availability of locally superior seeds	82.26	Very good
5	Marketing of produce	67.28	Good
Average		77.46	Good

**Table 5.** Value of impact index of partnership pattern on seed farmer

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