

The emerging roles of agricultural insurance and farmers cooperatives on sustainable rice productions in Indonesia

C Lopulisa¹, Rismaneswati¹, A Ramlan¹ and I Suryani²

¹Department of Soil Science, Hasanuddin University, Jalan Perintis Kemerdekaan KM 10, Makassar, 90245, Indonesia.

²Faculty of Agriculture, Cokroaminoto University, Jalan Perintis Kemerdekaan KM 10, Makassar, 90245, Indonesia.

E-mail: riesma76@yahoo.com

Abstract. Rice is the main staple food of most Asian countries including Indonesia. Most of the rice producers are constituted by small individual farmers characterized with mostly landless, have a less farming capitals and less access to pool resources and of course are confronted with various risk. Agriculture is faced with a lot of uncertainly most of which are not within the control of farmers. Global climatic change, climatic disasters, fluctuation of global economic and competitiveness of multinational company make difficulties of farmers to pursue his sustainable farming activity. The challenge and the role of government is to reduce uncertainly and to improve resiliency of the small farmer. Agriculture insurance shall focus on risk factors that are difficult to manage or cannot be managed by small farmers and it is should be viewed as just one aspect of the “holistic” risk management strategy. Technology, market, consumer, behaviour, development will always move forward, and no individual farmers can adapt this change alone, so small farmers need to corporate with each other that can optimized the resources they have. Cooperative could create possibilities, value added, shortening the supplied chain, made a product more effective and efficient, and finally can complete in domestic and global markets. Therefore, agriculture insurance as well a farmer cooperative may play an important role on sustainability of rice production in Indonesia. Nowadays and in the future agriculture sustainability is a not merely of technology problems but also a matter of economic-social-culture and politic issues within local, national, and international context.

1. Introduction

1.1. Fact About Rice Farmers and Farming in Indonesia

The contribution of agriculture to product domestic bruto of the country reach 10.28% at the year of 2017 which around 3.18% of it given by seasonal crops including rice. Total rice production amounted to 75.36 million ton of unhulled rice (9kg). Total number of the rice farmer were 17.73 million farmers households or 67.83% of the total farmer households of the country. Most of the rice farmers were small farmers; land holdings of less than 0.5 ha per farmer households, very poor access to institutional credit: poor capital formation, still taking loan from traders/money lenders. Most of the rice farming activities were done by individual farmers: rice cultivation, purchase of farming inputs (seeds, fertilizer, pesticide), produce procession and marketing, low adaption of technology, poor forward and backward linkage. Despite this rice's productivity average are still low as compared to potential yield that can be obtained by using recommended fertilizer and seeds [1].



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1.2. Farmers Groups and Farmer's Group Associations

Farmers groups in Indonesia were developed since in the early 1970s with the objective as media for extension services to meet the farmers for dissemination of technology and delivery farming input the "Bimas Program" for increasing rice production and receiving facilities from government of the country [1]. A farmer group consist of 25 to 50 neighbourhood farmers and 15 to 25 ha rice fields at subvillage level. After around 30 years, there is no attempted has been made to develop a farmer group, since 2004-2009 the government (ministry of agriculture) did amalgamation of a farmer groups within village as called "Gapoktan" which united all farmer groups in a village. Gapoktan may consist of 10-20 farmer groups which involved 250 to 500 ha rice field and 250 to 500 farmers members. Till now, no significant effort has been made to established a Gapoktan to become a farmer cooperates.

2. Agriculture Insurance and Smallholder Farming Dimension

2.1 Introduction

Small holder farming was characterized by a family operated firm often living in poverty, not diversified production and mean of living, more vulnerable in front of climatic risk, and economical fluctuations, difficult to reach geographically, living with lack of infrastructure, low level of education and awareness and they were not a target-group for big financial institution because of micro financing scale. Such circumstances made small farmer were confronted with various risk. Risk is a probable loss due to unfavourable factors such as: (1) weather like a periodic fluctuations in rainfall and strong winds, (2) natural disasters as floods, droughts, earth quakes, volcanic eruptions, (3) biological and environmental like pest, disease, farm contamination, degradation of resources, (4) market such change in supply and demand, changing standard, supply chain failures, (5) logistical and infrastructure cost and reliability, infrastructure destruction, conflict, labour disputes, (6) management and operational like poor management decisions, asset allocation, resistance to change, (7) Policy and institutional, monetary, tax labour and (8) political : domestic and international security concerns, trade disputes, nationalisation, and confiscation.

The challenge and the role of government is to reduce the uncertainly and to improve the resilience of the small farmers. Agriculture insurance should be view as just one aspect of the "holistic" risk management strategy. Agricultural Insurance plays an important role in reducing vulnerability of global food system to acute food shocks there by contributing to resilience and sustainability. The objectives of agricultural insurance are: (1) Protection for livelihoods and smoothing income during mayor events, (2) protection against default and (3) safety net, hence the allied objectives of agricultural insurance as a medium of risk transfer are: reducing poverty, reducing the severity of events and ecologically sustainable production of good. Insurance is not a magic wand-insurance should be (1) Economically effective, sustainable overtime, not risk distorting, socially responsible, systemic effect (BookP, 2016). Some critical points, of agricultural insurance are: (1) technically complex and one of the most expensive lines more satisfied when the standard of agricultural are of insurance, (2) farmer are more satisfied when the standard of insurance the same across the whole country, (3) insurance cannot cover 100% of farmers risk; the risk need to be layered and retained by different stake holders, (4) insurance is only one of multiple possible risk management tools, (5) insurance product and infrastructure development requires financial investment, which is beyond insures possibility, (6) the functions of different stake holder with PPP (Public Private Partnership) vary from country to country, but only their combination assures the whole system functionality and sustainability.

The role of the government on the establishment of agricultural insurance in many countries were highly significant. Type of government support to agricultural insurance program were: (1) Premium subsidy, state reinsurance protection, price support mechanism, tax rebates, (2) crop and weather – data, data processing, actuarial calculation, product design and insurance performance analysis, (3) informational and educational activities, legislative regulation capital requirements, (4) infrastructure; weather stations, irrigation system [2].

There are world well known agri-insurance PPP managing agents, federal crop insurance corporation USA, Agro Segoro, Spain, Alberta Finance service corporation, Manitoba, agricultural service corporation, Agricorp - Canada, Tarsim - Turkey : African Risk Capacity, Mongolian Agricultural Reinsurance joint stock company, PCIC, Philippines crop insurance corporation, PCIC): IBLIP – Mongolian – Pool of insurance under the umbrella of Mongolian Agriculture Reinsurance Company Providing Mortality index based livestock insurance. Agriculture is faced with a lot of uncertainty, most of which are not within the control of farmers risk can be controllable, uncontrollable, catastrophically (systematic) risk management strategies may include; saving, help insurance risk retention, risk avoidance, diversification, production, fragmentation, future contracts, crop modelling, maintaining farm health of plants and animals, insurance, linking insurance to credits, innovations, optimization, job outside of farm, government support (emergency relief) international financial support (donors funds).

Some risks can be insurable or not depends on the circumstances (a) Mutuality (risk community, big number of participants, (b) Accessibility (loss should be assessable, relation between the risk and the loss) (c) Randomness (the event occurrence time must not be predictable, the event is independent from the insured's will) (d) Economic viability (the loss-related financial needs can be covered on a planned basis) (e) Similarity of threat (all insured are exposed to the same threat). Which is not insurable goes into cover exclusions?

Functions of insurance were: (a) Provides protection against probable loss (b) Removes the uncertainties (sense of security) (c) Stabilized the farm income (d) Enable capital borrowing from bank and investment in Equipment / technology (e) Helps farm efficiency, production growth and development (innovation) (f) Attracts service of skilled insurance specialists to the insured, sometimes helps to prevent loss. (g) Disciplines (insurance terms and requirements).

2.2 USA Agro-insurance Schema and Regulations

Successful models and schemes and best practices in the management of agricultural insurance schemes/programs.

- The agro-production represents 1% of GDP, the world largest arable land, (b) Largest crop insurance market with a premium above 10 billion dollars, (c) The Program is available from 1915, first as a hail insurance, since 1980. MPCL was established after passing the crop insurance Act, (d) The federal crop insurance corporation (FCIC) administer the whole system, (e) Main crops covered are corn, cereal, soya and cotton, (f) The largest premium is written in Illinois, Dakota, Iowa, Minnesota, Nebraska, Kansas, and Texas.
- PCIP, Philippines: Philippines Coop Insurance Corporation 2015:
- No of farmers 1:194,932, Amount of cover 41,078,791, (Peso Million) Area (Ha) 855,504.5 Claim Paid, No of Farmer 154,224, Indemnity (em)1,378.57, Damage 3.36, Loss ratio (%) 0,52.
- Fondos Mexico: 370 small cooperative-like fondos accept the farmer risk and obtain proportional reinsurance from Agroasemex, Insurance
- Tarsim, Turkey: Pool of 23 insurance companies that cede the premium to a common tarsim insurance portfolio, which reinsured private, Insurance can retention, Insurance premium is close to 300 mn Euro [3].

3. A Farmer Cooperative

3.1. Definition of Cooperative

Development will always move forward and change the technologies market and consumer behaviour and will no individual farmers can adapt this change alone. Therefore, small farmers need to cooperate with each other that can be optimized the resources they have, cooperative could create possibilities, value added, shortening the supplied chain and made a product more effective and efficient and finally can compete in domestic as well as global market.

Co-operative is an enterprise which is jointly owned and democratically controlled by members; an autonomous association of persons united voluntarily, to meet their common economic, social and cultural needs and aspiration [4, 5]. According to USDA, 1987 co-operative are enterprises owned and controlled by the users which have:

1. User-owner principle: Those who own and finance the co-operative are those who use the co-operative
2. User-control principle: Those who control the co-operative are those who use the co-operative
3. User-benefit principle: The co-operative sole purpose is to provide and distribute benefits to its users based on their use

Social aspects of co-operatives [4, 5, 6]:

- To provide members with services or economic institutions which is beneficial to them and socially desirable
- Is a hybrid organization which is balanced between management of enterprise and social interest?

Why agricultural co-operative?

1. Market failure, (a) to build countervailing power against spatial monopsony (oligopsony) power in downstream or monopoly (oligopoly) power in upstream agro-food market. (b) To avoid expose market power or opportunistic behavior and (c) To avoid cheating based on information asymmetry
2. Market imperfections: (a) To supply missing services avoided by private company due to low profitability, (b) to gain from better coordination in horizontal or/and vertical dimension

Therefore, establishing and sustaining an agricultural co-operative is an effective means for farmer to save various type of transaction costs or to create additional value through better coordination.

Aggregation of farmer may improve bargaining power such as access to markets, inputs, technology and investment and enables small and medium farmers to exploit emerging opportunities domestic and global by integrating with SMES, retail chain and other organisations. Aggregation facilitates effective targeting of subsidies to farmers and aggregated platforms for efficient delivery of agri-inputs, insurance, etc for climate change coping mechanisms and risk mitigation [6, 7].

Typology of agricultural co-operative

- Co-ops that directly engaged in farming activity (production co-op)
- Co-ops that provide all kinds of goods and services to the farmer (supply co-op); farm inputs, farm machinery services, credit, insurance etc
- Co-ops that have taken over the sales activities of the farmer (marketing/processing co-op)

3.2. Successful Models of Agricultural Co-Operatives

3.2.1. India. The cooperative movement in India has witnessed substantial growth in diverse areas of the economy [7]. The cooperative movement in India has emerged as one of the largest in the world [9]. At present total number of cooperatives is amounted to 610020 with total number of members around 249.3 million. Total number of primary agricultural cooperative society (PACS) which are the foundations of Indian cooperative movement and agriculture is 147001 with number of members 181.15 million with rural network (village covered) 100% [10]. Some examples of India's most successful cooperatives are:

- Sugar cooperatives;
 - 280 cooperative sugar mills out of 340 mills, 30 million sugarcane grower-members, 50% of world sugar, Extensive diversification alcohol, paper, manufacture, power generation irrigation, large number of social institutions, strong welfare schemes

- Dairying cooperative;
 - 120.000 primary dairy cooperative, 12 million individual dairy-farmers, largest milk productions, Large producers like “AMUL”, 45% share of co-op ice cream, animal-care services, cattle-feed plants, extensive marketing network, 80% dairy farmers are women
- Cooperatives Banking;
 - Large, medium, small credit through 63.000 functional PACS, 32 state cooperative Banks, 850 district/subdistrict banks with 1860 branches, World’s largest agri-credit system, Central financing through NABARD (National Board Agriculture Rural Development), 8% lending rate (2% subsidy by government), PACS major users for agri production investment in assets, land improvement

Movement and development of cooperative in India started since several decades ago [11]. For instance, AMUL Gujarat Co-operative milk marketing federation Ltd (GCMMF) was funded in 1946, under voluntary action taken by Bhuwan Das Patel and Sardar Vallabhbhai Patel against sale of milk to Maharashtrian Got, with two villages only. Dr. Verghese Kurien, arriving in Anand in 1949 as a government employee to manage a dairy, he went from helping farmers repair their machinery to revolutionizing the Indian dairy industry by scripting operation flood corporate movement that turned India from a net importer of milk into one of the world’s two largest producer to day.

3.2.2. Philippines. Cruzian multipurpose cooperative is a local cooperative organized and existing under the laws of the Republic of Philippines. It is located of Brgy. Sta. Cruz. Magelang. Pampanga.

The cooperative started its operation in 1974 as a Samahang Nayan under the trade name Sta. Cruz Samahang Nayan during the general assembly held on June 6, 1940, the Samahang Nayan graduated as a multipurpose cooperative and then it was registered as a full-fledged cooperative with amended name CRUZIAN multipurpose cooperative, INC on June 14, 1990 is one of the most successful farmer’s cooperative in central Luzon. It has gained recognition not only among its peers but to the national government as well. It was a title holder as the most outstanding cooperative in region II for three consecutive years, 1999 to 2001 from then on, it continuously shown competence in its operation [12].

3.2.3. Bangladesh. Integrated farm management component (IFMC) is a 43 million USD project funded by Danida (75%) and government of Bangladesh (25%). It is implemented by Department of Agriculture Extension (DAE) and runs from July 2013 up to June 2018. It covers 373 upazila (sub-district). It has target of implementing 20.000 farmer field schools (FFS) for increased yield and diversification aim to work with more than 1000 farmer organization on marketing [13].

Jathian farmer organization date back to 2008. It was formed after completing a farmer field school on integrated co-op management. Today, it has 54 members (26M-28F). The executive committee has 13 members (9M-4F). Secretary and cashier are females. Jathian FO has collected weekly saving since 2008. They run a loan scheme for members and collective marketing on garlic and lentils.

In 2015, Jathian FO was selected to participate in the marketing and FO capacity building activities of IFMC. Four business Focal Resources (BFPS), two men and two women, attended a 10-day residential training course on farming, as a business, business planning and marketing. Afterward, the BFPS conducted 8 training sessions for 35 members of their organization and got them mobilized for the idea of collective marketing. Later three leaders (chairman, secretary and cashier) attended a 3-day training course on vision development, good governance and book keeping [13].

4. Agriculture Insurance and cooperatives in Indonesian: Perspectives, challenges and opportunities

A farmer groups in Indonesia had been established since 1970’s which were main objectives as a farmer group consist of 50 to 100 farmers groups association at village level (5 to 10 farmer groups) was established. At present called Gapoktan administration in national level called were amount to

around 70.000 Gapoktan. Due to global climatic change and economic global fluctuating to increase rice production and reduction of poverty the government with the parliament passed the law on year 2013 number 19 on the protection and empowerment of the farmer. The law deals with among other were agricultural insurance (article 37) and on the development of BUMS (farmer owned, and control cooperate (FOCC). Nationally some earlier attempt has been made for agricultural insurance and farmers corporate. On the rice crops year 2015-2016 ministry of agriculture provide ministry of agricultural provide fund of Rp. 150 Billion for agriculture insurance particularly rice on 1.0 million ha of field rice through JASINDO (Insurance Company Owned and Controlled Government) [14]. It is believed that agriculture insurance will encourage production. The orientation of agricultural production ('agricultural sector' in a broad sense) is strongly and directly associated with rural poverty reduction [15], including communication pattern and agricultural extension [16]. In South Sulawesi Province some initial action made to establish a corporate farmer by Hasanuddin University, supervision focus on: (1) the establishment of the farmers' cooperative at village level, (2) services and assistance to development small, medium enterprises at village level that can supply farm inputs on time at minimal cost. This effort indeed shows promising results unfortunately due to limited time and financial capacity the project should ended only in one year.

5. Conclusion

Established farmer group to a farmer corporate is necessary in order to make a small farmer more productive, profitable and sustainable. Services to increasing the productivity and sustainability of rice farming. Intensify guidance and supervising were requires from professionals/researches/extension. A long-term funding agency or sponsorships was not easily to find so International/ regional technical / expertized and finance were highly needed.

References

- [1] Fahmid I M 2004 *Gagalnya Politik Pangan Di Bawah Rezim Orde Baru: Kajian Ekonomi Politik Pangan Di Indonesia* (Jakarta: Yayasan Sandi Kota-ISPEI)
- [2] Mahul O, and Stutley C J 2010. *Government Support to Agricultural Insurance: Challenges and Options for Developing Countries*. World Bank. <https://openknowledge.worldbank.org/handle/10986/2432> License: CC BY 3.0 IGO Accessed on February 16, 2017
- [3] Bora B 2016 *Subsidised Agricultural Insurance in Turkey (TARSIM)*. General Manager of TARSIM. Turkey. <http://www.mapfre.com/ccm/content/documentos/mapfrere/fichero/en/subsidised-agricultural-insurance-in-Turkey.pdf>. Accessed on February 16, 2017
- [4] Jongik J 2017 *Basic of Cooperatives, Principles and fundamentals; Characteristics and Types of Cooperatives* The Workshop on Emerging Roles of Producer's Associations and Farmers Cooperatives Dhaka Bangladesh
- [5] Jongik J 2017 *Management of Cooperatives, Organizational and Financial Perspective*
- [6] Sharma M 2017 *Successful Models; Agriculture Extension-Rural SME.S in Cooperatives Increasing Productivity and Profitability/India's Case*
- [7] Sharma M 2017 *Changing Roles of Cooperatives to Prepare Future Challenges In Agriculture, Cares in Indian Rural Community*
- [8] Gupta J and Jain S 2012 A Study on Cooperative Banks In India with Special Reference to Lending Practices *Int. J. of Sci. and Res.* **2** (10)
- [9] Misra B S 2010 *Credit Cooperative in India, Past, Present And Future Routledge Taylor and Francis Group, London ISBN 13:978-0-203-85493*
- [10] Yashoda 2017 Role of Primary Agricultural Co-operative Society (PACS) In Agricultural Development In India. *Glob. J. of Manag. and Bus. Res.: C Finance* **17** (3) Version 1.0
- [11] Sandhu H K 2012 Agricultural Development in India and China: A Comparative Study *Int. J. of Soc. Sci. & Interdiscip. Res.* **1** (6) ISSN 2277 3630

- [12] Philippines Statistics Authority 2004 *A Review of the Agriculture Sector in Central Luzon*
- [13] IFMC (Integrated Farm Management Component) Department Agriculture Extension 2016 *IFMC Annual Report 2015-2016*. Ministry of Agriculture
- [14] Muthmainah D A 2017 *Membaca Masa Depan Asuransi Pertanian di Tangan Jasindo* <https://www.cnnindonesia.com/ekonomi/20171120093212-84-256780/membaca-masa-depan-asuransi-pertanian-di-tangan-jasindo>. Accessed on February 16, 2017.
- [15] Thalyta E Y, Mustajab M and Arsyad M 2010 *Abstracts of Doctoral Theses on The Indonesian Economy* Bulletin of Indonesian Economic Studies **46** (2): 251-254 DOI 10.1080/0074918.2010.486113
- [16] Ekasari Z K, Saleh S A M, Jusoff K, Salman D, Akhsan, Kasirang A, Arsyad M, Amrawaty A A, and Fudjaja L 2013 Communication Pattern and Conflict in Agricultural Extension *Asian Soc. Sci.* **9** (5) 27-33