

# Partnership expansion between farmers and the herbal medicine industry for community economic development

*Mulyono Daru\**

Principal Researcher of Agriculture Cultivation, The Agency for The Assessment and Application of Technology, Kawasan Puspiptek, Tangerang Selatan 15314, Indonesia

**Abstract.** The objectives of the research is to increase productivity and quality of medicinal plant so it will develop the economic community. The research is an analytical descriptive research with the information and primary data was gathered through various methods such as audience with key informant and discussion. Secondary data was gathered through scientific publication review. The world demand for herbal medicine continues to increase sharply especially with the spread of Covid-19 outbreak around the world. However, until now the development of medicinal plant cultivation in Indonesia have not developed properly. Results of the research indicate that through the partnership, the herbal medicine industry will provide several facilities to farmers in obtaining access to cultivation technology, capital, seeds, fertilizers, including counseling. Because of the facilities, farmers can cultivate according to Good Agricultural Practice (GAP) principles so that the productivity and quality of medicinal plants increased. In order to achieve success of the partnership, the government should provide policies to support synergistic partnership between medicinal plant farmer and Herbal Medicine Industry. Through the partnership is expected that the upstream and downstream sides will gain benefits so it will occur sustainable synergy and lead to support government programs in empowerment of economic community.

## 1. Introduction

Indonesia is located in the tropics and has a very huge biodiversity or mega diversity with various flora including various species of medicinal plants. It is estimated that currently in Indonesia there are around 9,600 species of medicinal plants that have the potential to be developed and have bright business prospects as well as a driving force for the economy of the community [1].

Medicinal plants are very popular plants, especially with the changes in the lifestyle of the people who are currently globalizing, known as back to nature. Back to nature does not only involve the consumption pattern of society, but has also penetrated other sectors including medicine. Globally, there has also been a change in the pattern of public

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\* Corresponding author: [darumulyono@yahoo.com](mailto:darumulyono@yahoo.com)

medicine, from the use of medicines made from chemicals to traditional medicines made from natural ingredients.

According to the World Health Organization (WHO) in 2014, an estimated 80% of the world's population uses herbal medicine to maintain health and fitness. WHO recommends the use of herbal medicines for the prevention and treatment of chronic, degenerative and cancer diseases. Medicines with herbal medicines have been used continuously by many countries in the world [2].

In recent years, according to data from the Biopharmaceutical Statistics, the Indonesia Central Agency of Statistics shows that the production of several medicinal plants in Indonesia tends to increase from year to year. Although production tends to increase, many of farmers in Indonesia are reluctant to cultivate medicinal plants as the main source of family income. Until now there are many farmers cultivate their medicinal plants traditionally so that the average productivity and quality are relatively low. According to [3] it is stated that the production of these medicinal plants is required to be of high quality to ensure the efficacy and safety of herbal medicines.

Besides that, the cultivation of this medicinal plant is still categorized in the "grey area" it is mean that there are not clear who will buy the production, quality standard, and price standard. This is different if farmers cultivate food crops such as rice, corn, sugarcane, and others. Selling agricultural food crops production is much easier and the price standards are also relatively clear because the government has set a Government Purchase Price Level [4].

These things cause farmers prefer to cultivate food crops with a more definite income calculation that can be expected to meet the needs of their families, including planning to save money for the benefit of the family for some time to come. Therefore, at this time there is a difference between the demand for medicinal plant raw materials and the supply produced by farmers. There is a gap between supply and demand, especially in terms of demand which is much bigger than the supply, which must be captured as a business opportunity that must be developed into an alternative to the empowerment of economic community. Especially with the Covid-19 pandemic outbreak that is evenly distributed throughout the world, the demand for herbal medicinal raw materials has increased significantly.

The Indonesian government continues to strive to develop the cultivation of these medicinal plants, which in the Decree of the Minister of Health of the Republic of Indonesia No.381/ Menkes/SK/III /2007 implies guidelines for the development of medicinal plants. However, this policy has not yet been followed by steps to encourage the development of good medicinal plant cultivation. This is because the policy regarding herbal medicine has not been followed by a conceptual program and the lack of clear and integrated coordination between related sectors with regard to medicinal plant development programs [5]. It is further stated that almost all herbal medicine industries, especially large industries in Indonesia, have not made partnerships with farmers to participate in providing technical guidance and training to medicinal plant farmers [6]. Currently there is only one large herbal medicine industry in Indonesia that have built a partnership with farmers, namely PT Sido Muncul or Sido Muncul Herbal Medicine Industry, located in Semarang Regency, Central Java.

Therefore, to overcome this problems, it is necessary to initiate the growth of mutually partnership programs between medicinal plant farmers and the Herbal Medicine Industry. Through this partnership, the Herbal Medicine Industry is expected to act as foster father in providing facilities in the application of cultivation technology including the provision of adequate production facilities and providing technical guidance to farmers so that the productivity and quality of medicinal plant production will increase. Through the partnership, medicinal plant farmers can cultivate according to Good Agricultural Practice

(GAP) principles. In India was reported that as a result of the lack application of medicinal plant cultivation according to GAP principles, the quality of production is low and there are reported negative effects on suffering patients [7].

The objectives of the research is to increase the growth of a synergistic partnership between farmers and the herbal medicine industry so that farmers will cultivate according to Good Agricultural Practice (GAP) principles and will result the productivity and quality of medicinal plant production will increase. The increase of productivity and quality is expected will lead to increase the competitiveness of medicinal plant production and it will empower the community's economy especially medicinal plant farmers significantly.

## 2. Research methods

This research was a descriptive analytic with the scope of discussion is concerning about efforts to build synergistic partnerships between farmers and the herbal medicine industry. In this research, primary data was used in the form of information with several medicinal plant experts and secondary data collected through tracing of various scientific publications and statistical data from the Central Agency of Statistics.

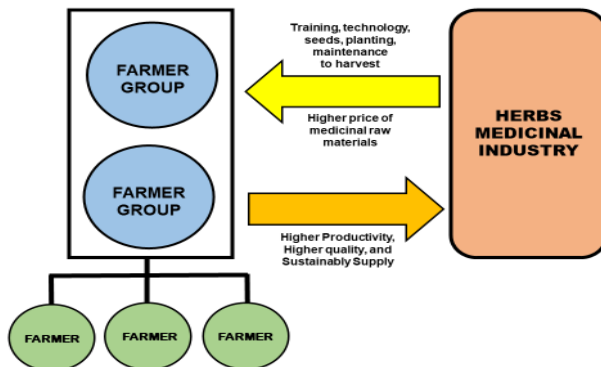
To complement the data and information, discussions were held in the Agricultural Scientific Meeting Forum which was attended by several agricultural experts at the Center for Agricultural Production Technology, Agency for the Assessment and Application of Technology, on May 8, 2020 and at the Scientific Literacy Forum held at the Technology Center. Agricultural Production, Agency for the Assessment and Application of Technology, on November 12, 2020.

The information analyzed in this research was mainly obtained from cases that occurred in several districts in Central Java Province, namely Wonogiri, Sukoharjo, Sragen, and Semarang Regencies which are the centers cultivation of medicinal plants in Indonesia. The data analysis related to the projection of the production of several potential medicinal plants in Indonesia was carried out by using the simple moving average method.

## 3. Research results and discussion

### 3.1 Research framework

The framework for developing medicinal plant cultivation through partnerships between medicinal plant farmers and the Herbal Medicine Industry is described in Figure 1 below.



Source: Author's Analysis Results

**Fig 1.** Framework Partnership between Farmers and Herbal Medicine Industry

In Figure 1, it can be seen that this partnership program has a very strategic with dual role. Firstly, the partnership plays a role in providing facilities to farmers, especially in obtaining access to cultivation technology, business capital, production facilities, such as: superior medicinal plant seeds, fertilizers and including counseling, application of the principles of Good Agricultural Practice (GAP) from the Herbal Medicine Industry. It is hoped that the result of partnership, the productivity and quality of medicinal plant production will increase and the farmers will receive high selling price.

Secondly, the partnership plays a role in facilitating direct marketing of medicinal plant production to the Herbal Medicine Industry with the high quality meeting or in accordance with the standards required by the Herbal Medicine Industry. With the partnership, the Herbal Medicine Industry also receive guarantee of raw materials availability or sustainable supply from farmer.

With the high level of selling price received by farmers, it is hoped that it will attract farmers to cultivate more intensive and wider medicinal plants. Therefore, to achieve success in fostering this Partnership, the local government is hoped can provide several facilitation in order to build better cooperation between farmer and Herbal Medicine Industry. The development of this partnership is expected to increase the competitiveness of the production of herbal medicinal raw materials from farmers and in turn, finally it is expected to have an impact on the empowerment of economic community.

### 3.2 Business prospect of herbal medicine

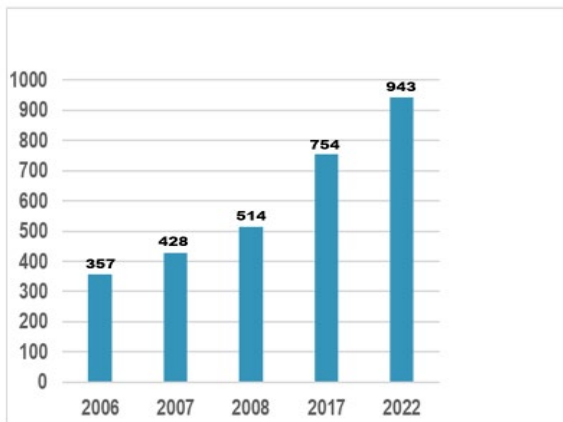
The Indonesian Central Statistics Agency at 2020 stated that there are four medicinal plant commodities with large production volumes, namely: ginger, turmeric, galanga, and curcuma. Especially the production of turmeric, galanga and curcuma there is an increasing trend. The increasing production of these medicinal plants is because the use of herbal medicines in recent years has tended to increase in line with the development of the herbal medicine industry for herbs, pharmaceuticals, cosmetics, food and beverages. The following is the production volume of several potential medicinal plant commodities in Indonesia, see Table 1.

**Table 1.** Production of Several Medicinal Plants in Indonesia (ton)

Commodity	Year			
	2016	2017	2018	2019
Ginger	340,341	216,587	207,412	174,380
Turmeric	107,302	128,339	203,458	190,909
Galanga	59,453	63,536	70,015	75,385
Curcuma	22,124	24,561	25,571	29,637

Source: [8]

Furthermore, the production value of herbal medicinal plants production continues to a significant increase, see Figure 1 below.



Source: [9]

**Fig 1.** Production Value of Medicinal Herbs in Indonesia (million US \$)

The production value of medicinal herbs in Indonesia occupies a large portion of the drug trade, where the value is projected to reach US \$ 943 million in 2022 or experience a relatively stable growth of 9.8% per year [9]. It is estimated that the use of herbal medicines in Indonesia continues to increase considering the Indonesian culture that cannot be separated from consuming herbal medicines. Furthermore, the results of the forecasting analysis of medicinal plant production are estimated that in 2025, the production of ginger, turmeric, galanga, and curcuma will continue to increase, see Table 2 below.

**Table 2.** Production Forecasting of Several Medicinal Plants in Indonesia (ton).

Year	Ginger	Turmeric	Galanga	Curcuma
2022	251,098	205,375	76,668	32,310
2023	263,388	205,857	78,427	35,223
2024	276,279	206,340	80,227	38,400
2025	289,801	206,824	82,069	41,863

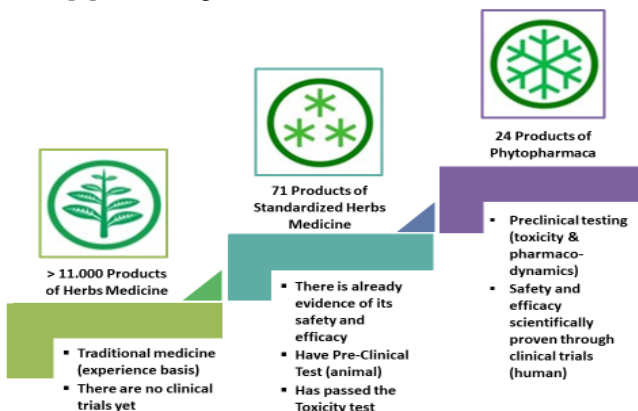
Source: [8, 10-12] (analysis results)

From the production aspect of supply and demand of herbal medicinal plants production in Indonesia continues to grow. Furthermore, processed products in the form of herbal medicines have high economic value because the demand in the global market continues to increase, estimated to grow by 8.5% per year [13].

Based on data from the Ministry of Trade in the first semester of 2020, the export value of Indonesian biopharmaceutical products has reached US \$ 4.2 million, an increase of 32.8% compared to the same period in 2019 of US \$ 3.17 million [14]. Thus, the prospect of developing herbal medicinal raw material agribusiness is expected to be very bright to boost the increase in community income, especially for medicinal plant farmers. However, in reality, especially in the cultivation of medicinal plants, there are still many problems so that the development of the production of the medicinal plant is still not as expected. Therefore, one of the things that needs to be done to overcome this problem is to develop a synergistic partnership between medicinal plant farmers and the Herbal Medicine Industry.

### 3.3 Synergistic partnership between farmers and the herbal medicine industry

Until now, the development of herbal medicine in Indonesia has progressed quite rapidly. According to the Food and Drug Supervisory Agency in 2020 there are 24 Phytopharmaca products, 71 Standardized Herbal products, and more than 11,000 Herbal Medicine products in Indonesia [9], see at Figure 3 below.

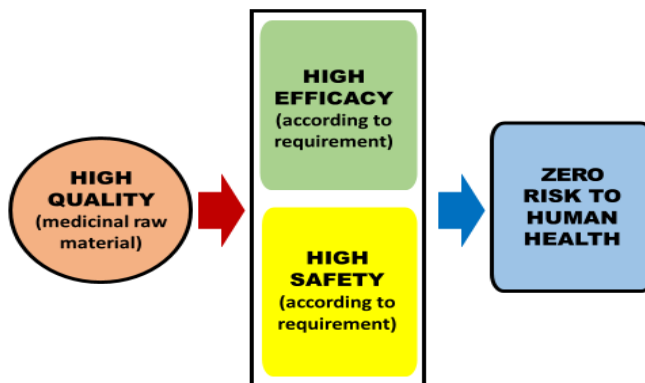


Source: [9]

**Fig 3.** Status of Herbal Medicines in Indonesia

From the Figure 3, it can be seen that the number of Modern Herbal Medicine or Phytopharmaca in Indonesia is still relatively few, only 24 products. This Modern Herbal Medicine is a herbal medicine that has been through clinical trials in humans, related to its efficacy, safety, and health risks to humans.

To produce this Modern Herbal Medicine, there are several basic requirements that must be met, namely the quality of the raw materials. The Herbal Medicine Industry, especially those producing Modern Herbal Medicine require high quality medicinal raw materials. This quality of raw material is a requirement from the Indonesian Food and Drug Supervisory Agency because it involves efficacy, safety, and health risks for people who consume it, see at Figure 4 below.



Source: [9]

**Fig 4.** Quality Requirement in the Herbal Medicine Industry

To produce high quality of Modern Herbal Medicine or Phytopharmaca, the consequence is that the raw materials used in the Herbal Medicine Industry as a result of medicinal plants must also be of high quality. In general, there are not many herbal medicine industries in the country that are able to produce quality modern herbal medicine because it is constrained by the supply of high quality raw materials.

The development of safe and efficacious and quality herbal products, starting from the cultivation of medicinal plants that must be carried out according to Good Agriculture Practices (GAP) to provide medicinal raw materials in accordance with the standard requirements as modern herbal medicine [15]. Therefore, at this stage of medicinal plant cultivation, the implementation must refer to the Standard Operational Procedure (SOP) for the cultivation of medicinal plants in accordance with recommendations from the Ministry of Agriculture. It is further stated that environmental factors also affect the quality of medicinal plant production, such as soil nutrient, solar radiation, moisture stress, temperature, and others [16] and [17]. Furthermore the climate factors contributed more to the active ingredient contents within cultivation of medicinal plants. Therefore, the development of partnership between farmers and Herbal Medicine Industry must also pay attention to the ecological conditions of the local area.

Through the Partnership Program between farmers and the Herbal Medicine Industry, adequate production facilities will be provided to farmers, such as: superior medicinal plant seeds, fertilizers and medicines, so that it is expected that the quality of production will be high. This will be very helpful in efforts to improve the quality of production of medicinal plant raw materials because there are still many farmers in Indonesia who cultivate traditionally.

Until now, the number of partnerships between farmers and the Herbal Medicine Industry is still relatively few. One of the big herbal medicine industry in Indonesia that is PT Sido Muncul has built mutually partnerships with more than 100 farmer groups especially in several regency in Central Java Province: Karanganyar, Sukoharjo, Wonogiri, and Semarang, [18].

In the partnership, PT Sido Muncul purchase the production from the farmer with a high price level because of high quality. Therefore, it is a beneficial synergy between the medicinal plant farmers and the Herbal Medicine Industry. This partnership is a mutually or beneficial partnership so that until now it continues to be well established. In order to develop the partnership, so the central government and local governments need to provide support in the form of facilities such as facilitating access to cultivation technology, increasing farmer development, providing fertilizer subsidies, facilitating business licensing for the herbal medicine industry, and so on. Furthermore, the central government is expected to participate in providing fiscal support for the growth of the herbal medicine industry, such as providing tax allowances, tax deductions, and others. With the support of several facilities from the government it will be hoped that there will increase synergistic collaboration between farmers and the Herbal Medicine Industry.

The impact of this partnership PT. Sido Muncul recorded a positive performance in 2020 where this company received profits that continued to increase every year. Sales volume of herbal medicine of PT. Sido Muncul Tbk continues to increase including exports with a growth of 8.7 percent from US \$ 211.03 million in 2019 to US \$ 229,65 million in 2020 (Melani, 2021). Through the partnership the productivity and quality of medicinal plant production will increase and it will lead to increase the competitiveness. Therefore, the development of partnership between farmer and herbal medicine industry should be enhance not only in Central Java but also in East Java and West Java where there are also have several suitable location for cultivating of medicinal plants. If several large herbal medicine industries in Indonesia are able to build partnerships such as carried out by PT

Sido Muncul it is expected that it will greatly support government programs in empowerment of economic community.

## 4. Conclusion

The development of partnership is expected to increase the quality of medicinal plants production so that it can meet the quality standards as requested by the Herbal Medicine Industry to produce Standardized Herbal Medicines and Phytopharmaca. Fostering the partnerships between medicinal plant farmers and the Herbal Medicine Industry must be carried out in synergy and harmony between the upstream and the downstream sides. The synergy and harmony between the upstream and the downstream sides is expected to provide a balance between the supply of raw materials and the demand for herbal medicines industry. In this partnership, both from the upstream and downstream sides will gain benefits so that it is hoped will occur sustainable synergy. The further impact is expected that this partnership is able to increase the competitiveness of national medicinal plant production and support government programs in the empowerment of economic community.

## References

1. Food and Drug Supervisory Agency. *Potensi Obat Herbal Indonesia* (2020).
2. Agency for the Assessment and Application of Technology. *Outlook Teknologi Kesehatan* (2016).
3. Li. C; Yan. Z; Zhang. L; and Li. Y., *Journal of Ginseng Research*. **38**, 227-232 (2014).
4. Ministry of Agriculture, Indonesia. *Prospek dan Arah Pengembangan Agribisnis Tanaman Obat*. Edisi Kedua (2007).
5. Siahaan. S dan Aryastami. N.K., *Media Litbangkes*. **28**, 3 p:157-166 (2018).
6. Pujiasmanto. B., *Strategi Pengembangan Budidaya Tumbuhan Obat Dalam Menunjang Pertanian Berkelanjutan*. Orasi Ilmiah Pengkukuhan Guru Besar Ilmu Pertanian, Universitas Sebelas Maret, Surakarta, Indonesia (2016).
7. Singh. P.A. and Baldi. A., *Biomedicinal Journal Science & Technology Research*. **5**, 5 p: 4860-4863 (2018)/
8. Central Agency of Statistics. *Statistic of Indonesia 2019*. (2020).
9. Food and Drug Supervisory Agency. *Hilirisasi dan Komersialisasi Inovasi Herbal Untuk Peningkatan Daya Saing Jamu dan Fitofarmaka* (2020).
10. Central Agency of Statistics. *Statistics of Medicinal Plants 2016* (2017).
11. Central Agency of Statistics. *Statistics of Medicinal Plants 2017* (2018).
12. Central Agency of Statistics. *Statistics of Medicinal Plants 2018* (2019).
13. Andarini. M. *Standardisasi Obat Herbal dan Tantangan Dalam Masa Pandemi Covid-19*. Disampaikan pada Webinar Trop BRC Talk Series (2020).
14. Kontan. *Menggaet peluang di tengah pandemi, Sido Muncul ekspor perdana obat herbal ke Arab Saudi* (2020).
15. Folashade. K. O; Omoregie. E. H; and Ochogu. A. P., *International Journal of Biodiversity and Conservation*. **4**, 3 pp. 101-112 (2012).
16. Ncube. B; Finnie. J.F; J. Van Staden. J. V., *South African Journal of Botany*. **82**, 11 – 20 (2012).
17. Yuan. Y; Tang. X; Jia. Z; Li. C; Mia. J; and Zhang. J., *Forests Journal*. **11**, 94 p: 1-16 (2020).
18. Sodiq. F. *Gandeng Petani, Sido Muncul Pastikan Serap Tanaman Obat Herbal* (2015).
19. Melani. A. *Sido Muncul Perluas Pasar Ekspor pada 2021* (2021).