

Developing porang agribusiness for multiple stakeholder benefits and supporting sustainable development in dryland areas of Lombok

by Taslim Sjah

Submission date: 14-Apr-2023 02:22AM (UTC-0500)

Submission ID: 2064236857

File name: a_Tanaya_2021_IOP_Conf._Ser._Earth_Environ._Sci._712_012031.pdf (650.08K)

Word count: 4251

Character count: 23543

PAPER · OPEN ACCESS

Developing porang agribusiness for multiple stakeholder benefits and supporting sustainable development in dryland areas of Lombok

To cite this article: T Sjah *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **712** 012031

View the [article online](#) for updates and enhancements.



The Electrochemical Society
Advancing solid state & electrochemical science & technology

240th ECS Meeting ORLANDO, FL
Orange County Convention Center Oct 10-14, 2021



Abstract submission due: April 9 **SUBMIT NOW**

Developing porang agribusiness for multiple stakeholder benefits and supporting sustainable development in dryland areas of Lombok

T Sjah^{1,2*}, Halil^{1,2}, I Budastra^{1,2} and I G L P Tanaya^{1,2}

¹Faculty of Agriculture, University of Mataram, Jalan Majapahit 62 Mataram 83125, Indonesia

²Study Program of Dryland Agriculture, Postgraduate Study, University of Mataram, Jalan Majapahit 62 Mataram 83125, Indonesia

*Corresponding author: taslim.sjah@unram.ac.id

Abstract. Lombok Island, including its dryland area, has a high potential for developing many kinds of crops, not excluded *porang* (elephant foot yam). This study describes the development of *porang* agribusiness in Lombok, its opportunities, and ways to develop forward. This study uses several sources of data and several data collection methods, in a term called triangulation. Primary data were collected through interviews guided by the instrument of unstructured questions listed as topics of investigations. Secondary data collection capitalize on available data from individuals and bodies. Data were analyzed mainly using descriptive statistics and qualitative evaluation. Results of the study evidenced several points. *Porang* is one of the promising crops to be developed in the dryland of Lombok Island. It grows easily and is adaptable to many agricultural conditions. It has also high demand in several forms of products. The consequences that follow from these are that the development of this crop can benefit not only *porang* growers, but also others, including traders, workers, or regional economic development as a whole. Above all, given that *porang* grows better with shades, then it brings implications for conserving nature better than that without *porang*, to add to the benefits of economic and social. This study recommends developing *porang* in dryland of Lombok or other regions.

Key words: Porang, Agribusiness, Business development, Dryland,, Sustainable development.

1. Introduction

Lombok has a high portion of dryland. The total amount of dryland in Lombok Island was 221,484 ha in 2017, and this takes 63 % of the total areas in the island [1]. This land is currently grown with food crops, such as rice, corn, soybean, vegetables, or with perennial crops, such as fruit trees and woods [2].

Lombok Island, including in its dryland area, has a high potential for developing many kinds of crops, not excluded *porang* (elephant foot yam). *Porang* can be grown in Lombok Island since Lombok Island meets the agronomic requirements of *porang* growth [3-5]. This crop can grow easily in the island, some have been growing by itself, for example in forest areas, without human involvement. On the other demand for this crop and its processed products is currently very high, with some proportion of that demand is unfulfilled, and that demand comes many sources including from overseas [6, 7-10].

The combination of high strength of *porang* farming with high opportunity of its business development obviously leads people to develop this crop and run business on farming and subsequent business that follow. The purpose of this paper is to describe the development of *porang* agribusiness in Lombok Island, West Nusa Tenggara, its opportunities, and ways to develop forward. Following this introduction and study method, this paper starts with describing, on the results and discussions section, on agronomic requirements for *porang* growth, development of *porang* production and its derivatives, marketing of the products, and added value of the processed *porang*. These all are important for understanding on the business development of this crop and its derivative products. The last part of the



section of results and discussions present the bigger impact of porang business on not only the business itself but also on social and environment that porang business development brings in. This again shows the important of developing the business of porang in Lombok Island, or elsewhere.

2. Materials and methods

This study took place in Lombok Island, with special attention is given to North Lombok, where authors have more interactions than other parts of the island. Data were collected in triangulation methods or in combinations, to complement data in one way or another, for example, by application of several observers, information sources, theories, and methods, and materials [11-14]. The combinations in this study include primary and secondary data collections.

2.1. Primary data collection

Primary data collection was carried out through surveys through interviews [14-16] with porang growers, traders, and related others. The interviews were conducted in unstructured mode in focus group discussions (FGD) guided by the list of topics investigated.

2.2. Secondary data collection

Secondary data collections were sourced from literatures and written reports [14, 16]. Literatures are particularly related to available theories and published research findings, Written reports were those reports available from individuals or bodies of data providers.

2.3. Combined primary and secondary data collections

Among the two sources of data collections, meeting notes are also capitalized from several meetings attended by the authors. It is called here as combined sources, since it contained mixed of both data sources, provided by the same respondents or informants. The same informants provided data in the form of primary data and secondary one. The providers expressed their responses and opinions and also provided already available data orally in the meetings and in the forms written reports which are handed to the researcher. Of particular utilizations were the notes from meetings that authors attended in relation to porang. The first meeting on porang was held in Suelos Village, Gangga District, North Lombok Regency, on 22 January 2020. This meeting was attended by several porang growers, farmer heads, village leaders, and other key persons. The second meeting was held in the Office of Planning Board (Bappeda) of North Lombok Regency, on 31 January 2020. This meeting was attended by several heads of porang farmers, village leaders, officers from Bappeda of North Lombok, and academicians from the University of Mataram. The meetings were held in focus group discussion (FGD) format [17-19]. Information gathered in the meetings was on production, processing, marketing, and other issues related to porang. The meetings were followed up with phone calls or WhatsApp messages with several attendees of the meetings, in order to gather or complete information in needs after the meetings. Another meeting on porang was in the format of National Seminar or Webinar titled 'Developing porang agribusiness for increasing society prosperity and improving environment in Indonesia'.

2.4. Data analysis

Data were then analyzed accordingly, majorly using descriptive statistics [20, 21] and qualitative evaluation [22, 23], to achieve research objectives. Examples of descriptive statistics applied in this study were frequency of occurrences and mode of data. Qualitative evaluations included evaluations by informants or respondents on gathered data and evaluations by researchers on obtained data and the findings related to the data.

3. Results and Discussions

3.1. Agronomic Requirements for Porang Production

Growing porang needs several agronomic conditions; include soil types, soil pH, height above sea level, and crop shade. Some of the properties of Lombok Island are described and furthermore be connected with these agronomic requirements, in the following.

Porang can grow in any type of soil [3-5]. This is a very obvious sign showing the very adaptability of the crop to soil. Since porang can grow in any type of land then porang has no problem to grow in any part of Lombok Island. Another property of soil is its pH for the growth of porang, which requires 6-7 [3, 5]. Soil pH in Lombok was found of 5-6 [24]. This also indicates that porang can be grown on this soil with this pH. There is a slightly difference on the pH requirement and actual condition, yet there is the similar part on this aspect, and the different part out of the requirement can be managed with specific efforts, for example, by adding lime to the soil. The addition of lime to soil which then increase soil pH is *important* action to help improve nutrient availability to crops grown [25, 26].

Height requirement for porang production is 0-700 m above sea level, with 100-600 m is the best for porang growth [3, 5]. Lombok Island is 12-166 m above sea level [2]. Accordingly, from height aspect, porang is suitable to be grown in Lombok Island. The suitable soil in its type and pH brings understanding on why porang can grow in many places in Lombok Island and with porang self-growth, in the sense that the crop has been growing without planting and maintaining by the people.

There is another requirement for porang to grow. Porang growth needs shades [4, 27, 28], although some also said that porang can grow without shade [3, 5]. The portion of shade that causes porang to grow better is of 40% [3-5]. The best plants to be used as shades for porang are of tree plants, such as teak and mahogany [3, 5, 29]. The need of shade from tree crops brings implication to soil or land conservation and subsequent impact of that conservation on agricultural practice. Sustainable agriculture occurs as porang plantation and its growth requirements of other plants conserve water, balancing nutrients and gases for growth of crops, both porang and other plants, on the soil (land). The resources such as water and other improved environment conditions become available during the year around or from year to year, such that they can be utilized for a long period of time. Hence, the growing of porang can be concluded as supporting sustainable agricultural practice. Environmental sustainability is one of three aspects of sustainable development, along with the aspects of economic and social [30-32].

3.2. Development of Porang Production in Lombok

Information on Porang development sources mainly from two meeting with porang communities or stakeholders, as described in the methods section. However, other sources are also included in necessary parts.

Porang is found in many places in Lombok. Farmers and traders confirmed that porang can be found easily in their villages. Porang particularly grow in the slopes of mountains or nearby. The crop can be found almost in many places around the mountain slopes. The crop has been growing without effort from growers. The people did not plant them and did not do maintenance to them. People can come and harvest them on their wish time.

Given the awareness of the people on the high economic value of porang then currently there are more commercial plantations of porang than previous period. Porang is grown now not only in forest and but also in other types of land, including in rain fed land, gardens, house yards, and so forth. It can be stated that virtually all land are utilized to be more productive now than before. As a result porang production eventually increase, albeit lack of quantitative figures. Quantitative data will need to be completed now and in future for better management of, for instance, marketing and job creation of this product and its derivatives.

Reasons for more plantation and production and subsequent activities like processing and trading can be said as a rational economic behavior [33-35] in which people are motivated by profits of doing

the activity. In opposite way, it can be stated from this development of people business that porang is profitable to be run as businesses.

3.3. Porang Products and several more

Porang is harvested in the form of wet yam [27, 36, 37]. In production locations or in the fields, this wet porang is called raw porang. This raw porang is then processed lightly or heavily into several forms. The lightest processed for porang is to cut the raw porang into pieces and then dried. This product is called porang chips. Moreover, porang chips are processed into porang flour. The transformation into porang flour included as heavy process since there are several treatments applied to eliminate unwanted character or unwanted contents of the flour. One content that need to be removed from porang flour is calcium oxalate [38-40].

Porang flour can be used for many purposes in several products. As has become flour, this porang product can function as substitute of flour, for example, as wheat flour or rice flour. Flour is used in industries of several foods like cookies, bakeries, and noodles. The flour can also have other functions, such as, for ice cream stabilizer [41], for health supplements [42, 43], for friendly environment polymers [44], several more.

3.4. Marketing Aspect of Porang

The increased production of porang in Lombok Island is obviously driven by market demand. Demand for porang in the locations is high and comes from several markets [see for examples, 6, 7-10]. High demand is reported here in the sense that all available porang products in the locations are all taken out by buyers. Porang demand sources from local, domestic, and international markets. In local market, such as in villages around Lombok Island, porang is sold in the form of fresh porang (that is raw porang yams just harvested from the land) and porang chips (harvested porang yams that are cut into pieces and then dried under the sun or in room conditions). In reference to domestic market (defined here as market within Indonesia), porang in the form of the two previously mentioned forms are traded or more accurately bought by traders from Java. In Java then fresh porang or porang chips are processed into porang flour. Examples of international market for porang are the demand of porang from Japan and China [8].

3.5. Added Value of Porang Products

Marketing of porang in the forms of other than fresh porang creates added value for the product. Each processed porang, lightly or heavily, has higher value than its fresh form. As a description fresh porang at village level in several locations in Lombok Island during the early year of 2020 was about Rp 10,000 per kg. The price of this porang increased markedly, following processing activities. For instance, porang chips, the lightest processed product of porang, with the treatments of cutting into pieces and then drying them, had the price of Rp 40,000 per kg. Moreover, porang flour, the more and farer processed product from its original, had the prices of Rp 300,000 per kg. Furthermore, porang flour is used in many products, including as main products (in which porang contributes the most to the products), and as additional products (as opposed to the main products). These main and additional products have prices far higher than fresh porang. This description of added value appears to be rough, as the conversion ratio from fresh porang to other processed porang has not been included, yet this at least indicates high added value of processing porang, and therefore indicates that this business is promising or profitable and attracts people to involve in the business. Profit is one the main motive for people to participate in doing something [33, 35, 45].

This description of the price jump from fresh porang into several processed product indicates the increase value of the product, or well known as value added or added value. In addition to the form utility, the processed products have additional utilities, including the utilities of time and place. As products have been processed, they can have a longer self-life, hence they can be stored and be sold at times of high prices. Similarly, the processed products are easier to be transported than the unprocessed ones, due to smaller volume of the processed products, in which unwanted parts have been removed from the original products [46-48].

3.6. Economic and Social Impacts of the Production of Porang and its Derivatives

Porang production has proven scientifically to have positive impact on environment, that is to create better environment for agricultural development, particularly because of conserving water in the soil or land. Available water in the soil creates healthy soils and these have several important functions for plant growth. These include, among others, binding soil minerals, facilitating the transportation of the micro-organisms and dissolved chemical nutrient, and making nutrients available for plant uptake [see for example, 49].

It is not only good for environment, the production of porang and its derivatives also brings positive impacts economic and social. These three aspects of development lead to sustainable development [31, 50]. Economic aspect of sustainable development means that the development should bring benefits, like creating prosperity for the community. This economic benefit must also create social advantage, in the sense that the development, for example, creates jobs for the people and therefore those people are happy with the development. Porang business, as described previously, provides business profits for the business implementer and also brings benefits many groups of people, including porang farmers, traders, transporters, marketers, and workers, for creating jobs and sources of income.

4. Conclusions and Recommendations

Porang is one of the promising crops to be developed in dryland of Lombok Island. It grows easily and is adaptable to many agricultural conditions. It has also high demand in several forms of products. The consequences that follow from these are that the development of this crop can benefit not only *porang* growers, but also others, including traders, workers, or regional economic development as a whole. Above all, given that *porang* grows better with shades, then it brings implications for conserving nature better than that without porang, to add to the benefits of economics and social. This study clearly recommends developing porang in dryland of Lombok or other regions.

5. Acknowledgement

Authors of this paper express special thanks to: University of Mataram, for funding this study; informants, for sharing data and ideas for this study; participants in ICBB2020 seminar for any constructive comments and critiques; and others, for support in one way or another to any stage of this research.

6. References

- [1] Pusdatim Pertanian (2019) *Statistik Lahan Pertanian Tahun 2014-2018 (Statistics of Agricultural Land 2014-2018)*, Pusat Data dan Sistem Informasi Pertanian, Sekretariat Jenderal – Kementerian Pertanian (Center for Agriculture Data and Information System, Secretariat General – Ministry of Agriculture), Jakarta.
- [2] BPS NTB (2020) *Provinsi Nusa Tenggara Barat Dalam Angka (Nusa Tenggara Barat Province In Figures) 2020*, Badan Pusat Statistik Provinsi Nusa Tenggara Barat, Mataram.
- [3] GDM. (2020) Cara Budidaya Porang Di Lahan Terbuka Agar Hasilkan 176 Juta Sekali Panen, GDM, Surabaya.
- [4] Hidayah, R N (2016) *Budidaya Tanaman Porang Secara Intensif*, Universitas Gadjah Mada, Yogyakarta.
- [5] Jujang. (2020) Tips Sukses Budidaya Porang di Lahan Terbuka, In *Harapan Rakyat*, Harapan Rakyat Media, Jakarta.
- [6] Kabar Priangan. (2020) Permintaan Pasar Komoditas Porang Belum Terpenuhi, In *Kabar Priangan*, Kabar Priangan, Ciamis.
- [7] Daniarto, R. (2020) Ekspor Porang dari Jawa Timur Terus Meningkat, In *Surabaya Inside*, Surabaya Inside, Sidoarjo.
- [8] Smscom. (2019) Porang Diekspor ke Jepang dan Tiongkok Harganya Mencapai Rp 65.000/Kg, In *Suara Merdeka Solo*, Suara Merdeka Solo, Solo.
- [9] Sahabat Petani. (2020) Pasar Minta Pasokan Porang, In *Sahabat Petani*, Sahabat Petani, Gresik.

- [10] Sumarwoto. (2012) Peluang Bisnis beberapa Macam Produk Hasil Tanaman Iles Kuning di DIY Melalui Kemitraan dan Teknik Budaya, In *Business Conference*, Yogyakarta.
- [11] Neuman, W L (1997) *Social research methods: Qualitative and quantitative approaches*, Allyn and Bacon, Boston.
- [12] Yeasmin, S, and Rahman, K F. (2012) Triangulation' Research Method as the Tool of Social Science Research, *BUP Journal 1*, 154-163.
- [13] Heale, R, and Forbes, D. (2013) Understanding triangulation in research, *Evidence Based Nursing 16*, 98.
- [14] Bryman, A (2016) *Social Research Methods*, 5 ed., Oxford University Press, Oxford.
- [15] Babbie, E (2004) *Survey research methods*, Wadworth Publishing Company, Belmont, California.
- [16] Sjah, T (2011) *Metodologi Penelitian Sosial Ekonomi (Research Methodology for Socio Economics)*, Mataram University Press, Mataram.
- [17] Kamberelis, G, and Dimitriadis, G. (2005) Focus groups: Strategic articulations of pedagogy, politics, and inquiry, In *The Sage Handbook of Qualitative Research* (Denzin, N K, and Lincoln, Y S, Eds.) 3rd ed., pp 887-908, Sage Publications, Thousand Oaks, California.
- [18] Kumar, K. (1993) An overview of rapid appraisal methods in development settings, In *Rapid Appraisal Methods* (Kumar, K, Ed.), pp 8-22, World Bank, Regional and Sectoral Studies, Washington, D.C.
- [19] McCracken, J A, Pretty, J N, and Conway, G R (1988) *An introduction to rapid rural appraisal for agricultural development*, International institute for environment and development, London.
- [20] Moore, D S (2000) *The Basic Practice of Statistics*, W.H. Freeman, New York.
- [21] Fox, K A (1968) *Intermediate Economic Statistics*, John Wiley & Sons, New York.
- [22] Patton, M Q (2002) *Qualitative research and evaluation methods*, 3 ed., Sage Publications, Thousand Oaks, California.
- [23] Silverman, D (2000) *Doing qualitative research: A practical handbook*, Sage Publications, London.
- [24] Priyono, J, Yasin, I, Dahlan, M, and Bustan. (2019) Identifikasi Sifat, Ciri, dan Jenis Tanah Utama di Pulau Lombok (Identification of The Properties, Characteristics, and Type of Main Soils in Lombok Island), *Jurnal Sains Teknologi & Lingkungan 5*, 19-24.
- [25] McCauley, A, Jones, C, and Olson-Rutz, K (2017) *Soil pH and Organic Matter*, Montana State University, Bozeman.
- [26] Goulding, K W T. (2016) Soil acidification and the importance of liming agricultural soils with particular reference to the United Kingdom, *Soil Use and Management 32*, 390-399.
- [27] P4I (2013) *Budidaya dan Pengembangan Porang (Amorphophallus muelleri Blume) Sebagai Salah Satu Potensi Bahan Baku Lokal*, Pusat Penelitian dan Pengembangan Porang Indonesia (P4I), Universitas Brawijaya, Malang.
- [28] Hettterscheid, W L A, and Ittenbach, S. (1996) Everything You Always Wanted to Know About Amorphophallus, but Were Afraid to Stick Your Nose Into!!!!, *Aroidena 19*, 7-131.
- [29] Irawan, A. (2016) Budidaya Porang In *Agrokompleks Kita*, Agrokompleks Kita, Jakarta.
- [30] UNDP (2015) *Sustainable Development Goals*, United Nations Development Programme, New York.
- [31] Quazi, H A. (2001) Sustainable development: integrating environmental issues into strategic planning, *Industrial Management & Data Systems 101*, 64-70.
- [32] Maikhuri, R K, Senwal, R L, Rao, K S, and Saxena, K G. (1997) Rehabilitation of degraded community lands for sustainable development in Himalaya: a case study in Garhwal Himalaya, India, *International Journal of Sustainable Development and World Ecology 4*, 192-203.
- [33] Sjah, T (2010) *Ekonomi Pertanian (Agricultural Economics)*, Mataram University Press, Mataram.
- [34] Seitz, W D, Nelson, G C, and Halcrow, H G (2002) *Economics of resources, agriculture, and food*, 2 ed., McGraw-Hill, New York.
- [35] McIver, J (2001) *Micro economics*, McGraw-Hill, Roseville, NSW, Australia.
- [36] Sari, R, and Suhartati. (2015) Tumbuhan Porang: Prospek Budidaya Sebagai Salah Satu Sistem Agroforestry, *Info Teknis Eboni 12*, 97-110.

- [37] Pitojo, S (2007) *Seri Budidaya Suweg : Bahan Pangan Alternatif, Rendah Kalori*, Kanisius, Yogyakarta.
- [38] Koswara, S (2013) *Teknologi Pengolahan Umbi-umbian: Pengolahan Umbi Porang*, Institute Pertanian Bogor, Bogor.
- [39] Cote, G G. (2012) Distribution of Calcium Oxalate Crystals in Floral Organs of Araceae in Relation to Pollination Strategy, *American Journal of Botany* **99**, 1-12.
- [40] Chairiyah, N, Harijati, N, and Mastuti, R. (2013) Variation of Calcium Oxalate (CaOx) Crystals in Porang (*Amorphophallus muelleri* Blume), *American Journal of Plant Sciences* **4**, 1765-1773.
- [41] Nareswari, A D. (2016) Pengaruh Penambahan Glukomanan Porang (*Amorphophallus oncophyllus*) Dan Kappa Karaginan Terhadap Sifat Fisik Dan Sensoris Es Krim, In *TEKNOLOGI PANGAN DAN HASIL PERTANIAN*, Universitas Gadjah Mada, Jogjakarta.
- [42] Gallaher, D D, Gallaher, C M, Mahrt, G J, Carr, T P, Hollingshead, C H, Hesslink, R, and Wise, J. (2002) Aglucomannan and chitosan fiber supplement decreases plasma cholesterol and increases cholesterol excretion in overweight normocholesterolemic humans, *Journal of the American College of Nutrition* **21**, 428-433.
- [43] Chen, H L, Sheu, W H H, Tai, T S, Liaw, Y P, and Chen, Y C. (2003) Konjac supplement alleviated hypercholesterolemia and hyperglycemia in type 2 diabetic subjects: a randomized double-blind trial, *Journal of the American College of Nutrition* **22**, 36-42.
- [44] Pradipta, I M D, and Mawarani, L J. (2012) Pembuatan dan Karakterisasi Polimer Ramah Lingkungan Berbahan Dasar Umbi Porang, *Jurnal Sains dan Seni Pomits* **1**, 1-6.
- [45] Krugman, P R, and Obstfeld, M (2000) *Internasional Economics*, Addison-Wesley, Boston.
- [46] Kotler, P, and Armstrong, G (2011) *Principles of Marketing*, 14 ed., Pearson Prentice Hall, New Jersey.
- [47] Stanton, W J, Etzel, M J, and Walker, B J (2000) *Fundamentals of Marketing*, McGraw-Hill, New York.
- [48] Dunne, T (1999) *Marketing agricultural products: An Australian perspective*, Oxford University Press, South Melbourne.
- [49] Craggs, G (2017) *The Role of Water in Ensuring Healthy Soils*, Future Directions International, Dalkeith.
- [50] Mensah, J. (2019) Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review, *Cogent Social Sciences* **5**, 1-21.

Developing porang agribusiness for multiple stakeholder benefits and supporting sustainable development in dryland areas of Lombok

ORIGINALITY REPORT

19%

SIMILARITY INDEX

17%

INTERNET SOURCES

16%

PUBLICATIONS

11%

STUDENT PAPERS

MATCH ALL SOURCES (ONLY SELECTED SOURCE PRINTED)

3%

★ repository.ub.ac.id

Internet Source

Exclude quotes Off

Exclude matches < 1%

Exclude bibliography Off

Developing porang agribusiness for multiple stakeholder benefits and supporting sustainable development in dryland areas of Lombok

GRADEMARK REPORT

FINAL GRADE

/0

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8
