PROSPECTS AND STRATEGIES FOR DEVELOPING GAMBIR (UNCARIA GAMBIR ROXB.) IN PAKPAK BHARAT DISTRICT

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Abstract

Gambier (Uncaria gambir Roxb.) is a valuable plantation commodity with the potential to be developed as a source of income for communities in various regions in Indonesia. Pakpak Bharat Regency has agro-climatic conditions that are relatively suitable for gambier cultivation, but its development is not yet optimal in terms of production, marketing, and farmer institutions. This study aims to analyze the existing conditions of gambier cultivation, identify agronomic and socio-economic factors that influence its development, and formulate prospects and strategies for gambier development in Pakpak Bharat Regency. The research method uses a descriptive approach with data collection through field observations, interviews, and documentation studies, as well as a SWOT analysis to determine development strategies. The results show that Pakpak Bharat has considerable potential in terms of land suitability, labor availability, and increasing market opportunities. However, there are still obstacles in the form of low product quality, limited processing technology, and weak market access. The SWOT analysis shows that development strategies can be directed at improving farmer capabilities, modernizing processing, strengthening institutions, and expanding marketing networks. Thus, gambier plants have good development prospects in Pakpak Bharat Regency if supported by appropriate policies and technical interventions.

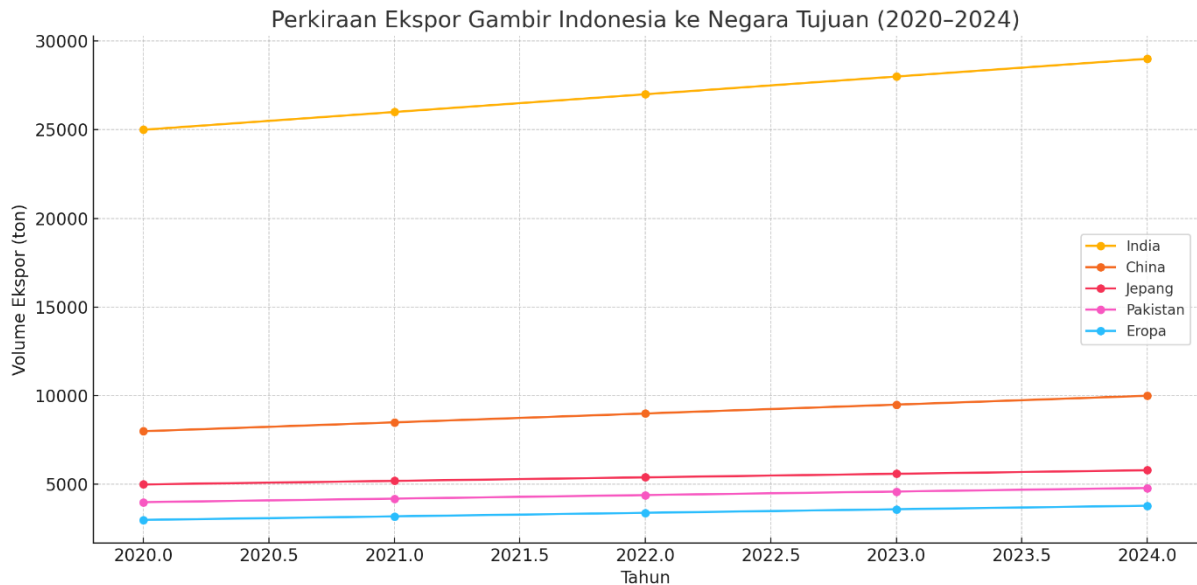*Keywords: **gambier, commodity development, SWOT analysis, farming, Pakpak Bharat.***

INTRODUCTION
1.1 Background

Gambier (Uncaria gambir Roxb.) is a plantation commodity with significant economic value in Indonesia. Over the past few decades, gambier has been known as a raw material for the leather tanning, textile dye, pharmaceutical, cosmetic, and food and beverage industries due to its high catechin and tannin content. Despite its significant potential, this commodity remains a smallholder plantation crop whose development has not been optimal, particularly in terms of productivity, processing, and marketing. In Indonesia, U. gambier is most widely distributed on the island of Sumatra, including West Sumatra, Aceh, South Sumatra, Riau, and North Sumatra. However, West Sumatra and North Sumatra are the main centers of gambier production, while gambier production from other areas in Sumatra is relatively small. Indonesia is the world's largest gambier exporter, controlling approximately 34% of the global market share. India is the largest importer of Indonesian gambier, accounting for 96.88% of total exported gambier. Other importing countries include Pakistan, Singapore, China, Japan, the UAE, and Malaysia. The market prospects for gambier remain wide open and have the potential to continue growing in the future.

Estimated Chart of Indonesian Gambir Exports to Destination Countries
Source: BPS Indonesia (2025)

According to Yogi (2011), Indonesia is the main supplier of gambier, most of which comes from the North Sumatra Province, especially from Pakpak Bharat Regency. Pakpak Bharat Regency is blessed with abundant natural resources and fertile soil, making it ideal for cultivating a wide variety of crops, both agricultural and plantation. One of the region's signature crops is gambier, widely known for its diverse benefits and uses. This unique crop has been cultivated for generations by farmers in Pakpak Bharat Regency. To view the Gambier Plantation Area (Ha) and Gambier Production (Tons) by District in Pakpak Bharat Regency, 2023 and 2024.

Kecamatan	Luas Areal Tanaman Perkebunan Gambir (Ha)		Produksi Gambir (Ton)	
	Tahun		Tahun	
	2023	2024	2023	2024
Salak	123	250	197	197
Sitellu Tali Urang Jehe	867,5	932	618	2796
Pagindar	14	14	36	30
Sitellu Tali Urang Julu	1	1	10	10
Pergetteng Getteng Sungkut	25	350	286	700
Kerajaan	55	50	96	120
Tinada	14	25	40	50
Siempat Rube	1,5	1,5	7	7
Pakpak Bharat	**1101**	**1623,5**	**1290**	**3910**

Table of Gambir Plantation Area (Ha) and Gambir Production (Tons) by District in Pakpak Bharat Regency, 2023 and 2024 .
Source: BPS Pakpak Bharat Regency in Figures 2025

Various problems at the farmer level , such as the poor quality of seeds, limitations in cultivation and post-harvest technology , weak access to capital , as well as the lack of marketing networks , are limiting factors in the development of gambier in this area . In addition , the lack of farmer leadership that has not been well organized hinders the increase in bargaining power in the market and

processing industry . In the modern agribusiness context , commodity balance does not only speak to the technical aspects of cultivation, but also integration between upstream, production, post-harvest , and marketing . On the other hand, market demand for quince and gambier derivatives continues to increase globally due to their use in the health food , antioxidant , pharmaceutical and cosmetic industries . This shows that opportunities for Gambier balance at the international level are still wide open. If Pakpak Bharat Regency is able to improve the quality and continuity of production, this area can contribute significantly to meeting market demand . In the context of regional development , agricultural commodities have become one of the sources of community income as well as encouraging economic growth based on agricultural activities . Efforts to balance the economy need to be reviewed from the potential aspects of the region , the feasibility of the farming business , social and economic factors , and the willingness of farmers to adopt the technology . Therefore , the peinli iti ian meinge inai prospeci c pe inge gambii r crop plant in Pakpak Bharat Regency is very re ile i van to be carried out as a basis for structuring the strategy of gi pe inge ib ibiation of local government pote i. Based on the description above , it can be concluded that gambier crop balance in Pakpak Bharat Regency has a large potential but still faces various challenges . For this reason , a comprehensive study is needed to analyze the important conditions , supporting and inhibiting factors , as well as the balance of them in the context of regional agricultural development .

1.2 Formulation of the problem
Based on this background , the formulation of the problem in this research is :
1.   What are the conditions for gambier plant cultivation in Pakpak Bharat District ?
2.   How do agronomic, social and economic factors influence the balance of gambier crops in Pakpak Bharat District ?
3.   What are the prospects for growing gambii r plants (Uncari a gambi ir Roxb.) in Pakpak Bharat Regency ?
4.   What strategy is appropriate to support gambier crop balance in Pakpak Bharat District ?

1.3 Research Objectives
The aim of this peine lii ti ii is :
1.   Analyzing the conditions and conditions of gambier plant cultivation in Pakpak Bharat District .
2.   It contains the core de fi ciation of agronomic , social and economic factors that in fl uence the characteristics of the rice plant.
3.   Examining gambi 's crop balance prospects based on regional potential and market opportunities .
4.   I can formulate a strategy for developing an effective image balance and effective application .

1.3 Benefits of research
The benefits of i pe ine ili iti ian i ini i:
1.   To make a contribution to the balance of research and economics academies related to agriculture , business and trade, commodity balance .
2.   It becomes an additional resource in the strategy and strategy of gambi 's commodity balance .
3.   To provide input for regional government officials in the preparation of gambian balance policy policy .
4.   Becoming a guide for farmers and business actors in increasing agricultural productivity and agricultural marketing .
5.   To provide a reference for the following sections .

LITERATURE REVIEW
2.1 Gambier Plant (Uncaria gambir Roxb.)
The gambi rme plant is a plant from the Rubi Ace family which is often found in the Southeast Asian region , especially Indonesia. The main product of the gambier plant is gum or extract which contains high levels of the life of kiin and tani . This plant is known for its strong anti -oxidant and anti - oxidant activities , while it is widely used in the leather tanning , textile , pharmaceutical , cosmeceutical , and food and drink industries .In addition to its economic value , Gambi i also has a large role in the balance of the pharmaceutical industry and heirbal products .

Picture of Gambi Farm Land Conditions for People in Pakpak Bharat Regency

In terms of morphology , the gambier plant is a climbing shrub (cliimbi ng shrub) , with climbing stems and a single facing leaf. This plant can grow at an altitude of 50–500 meters above sea level , in areas with wet climates with high rainfall . These conditions are in accordance with the local regions in Sumatera , including the District of Pakpak Bharat .

2.2 Conditions for Growing and Cultivating Gambier

Gambi i r grow optimally on soil with a richly irrigated le i r texture with a pH ranging between 4.0–6.0 . In addition to this , gambier plants require sufficient light intensity , good drainage , and a good water handling environment . The autumn season due to long periods of time can reduce the quality of leaf bags and gambier extract , so that the percentage of water and rainfall become important factors in cultivation . The tec hnique of ambiti ative culti ve in g eneral still h e remains a fat tradi tional . Farmers usually carry out planting without the selection of superior seeds , minimal fertilization , as well as relatively simple crop and post-harvest technology . The processing process of gambier , especially the processing process , the processing process , and the processing process , really determine the quality of the final product . The lack of skill in this process consistently results in the low quality of the people's image.

2.3 Economic Value and Utilization of Gambier

Gambi i r me i mi i li i ki this ila i ei high economy because of the content of the main ki i mi ii , namely kate i ki i n and tani i n. This kate ki i n gambi i r me product is one of the natural and antioxidants that is widely used in health products and cosme ii . Apart from this , the leather tanning , ink and textile industry is also the main consumer of gambire . The inte ional market shows a fairly stable demand for the current market , especially from East Asian countries . Indonesia , especially West Sumatra , has so far become a world-wide producer with spark plug contribution , reaching more than 80 percent of industry . However , because the domicile of rice production still lies in intermediate products , the added value that farmers enjoy is still highly developed . Gambling development in other regions in the meaning of Pakpak Bharat can open up opportunities in the region of production and this mechanism increases national bargaining power in the global market .

2.4 Development of Plantation Commodities

The balance of plantation commodities basically involves the integration of upstream , cultivation , post - harvest and marketing aspects . Agribusiness development mode i s a mode of agriculture that emphasizes the main features of production technology applicability , human resource capaci ty increase , business support , and effective market access . Regional leadership plays a strategic role in developing a conducive environmental policy through infrastructure development , core security policy , and outreach . In the cont ition of gambi ir development pei i, the strat e gy that i re ire co me ndation illi t ipi ti o n i m p eiti o n cultivation tech niques , i n d i ention of superior seeds , m i n it i o n i t io npoc h inioni n g , a nd imbe i Determining the leadership level of a cooperative or group of farmers who are able to strengthen the bargaining position of farmers .

2.5 SWOT Analysis in Commodity Development

SWOT analysis is one of the strategic valuation tools used to assess the potential balance of a commodity based on internal and external factors.

1. **Strengths** : internal aspects that support balance , the meaning of land potential , the suitability of agro - climatic conditions , and the presence of land resources .
2. **Weaknesses** (Weaknesses) : internal limitations such as low level of technological characteristics , limited capital access , and varying product quality .
3. **Opportunities** : market opportunities , export market potential , industrial demand , or government policy support .
4. **Threats** : external threats such as price fluctuations , global competition , and changes in trade policy .

SWOT analysis is often used in commodity development and development strategies to formulate strategy strategies that best suit the conditions of the region . This company uses SWOT to assess gambian prospects in Pakpak Bharat Regency .

2.6 Previous Research

A number of activities involving the increase in gambie have been carried out previously . Hartati i (2018) discovered that the benefits of kate ii iin gambii ir in the pharmaceutical industry i and found that the potency of kate i balance ii as an antioxidant raw material and is very large . Research by Sire Gar (2020) found that the main obstacles to balanced trade are not in the quality of raw materials , processing technology , and marketing . In the meantime , Wahyuni (2019) shows that the international market for these products is experiencing an increase in demand along with the trend of natural and herbal products . Of the various pein eli iti ian te irse i but , it is seen that gambi ir commodities have a sig nifi c prospect , but pe inei li iti i an speci fic me i nge in g the gambi ir population in the Pakpak Bharat Regency is still hte ir limited . Due to this , this pein e li iti ian ii fill the gap pe ine ili iti ian te irse but by focusing on the potential and strategy gi ipe in g the image of the i wii this area .

RESEARCH METHODS

3.1 Types and Approaches of Research

This pe i ne li i t i e i use a **descriptive** approach with method **qualitative and quantitative (mix method)** . The descriptive definition is used to describe the cultural conditions of agricultural power in Pakpak Bharat Regency , while the quantitative definition is used to analyze the data on production , land area , and the factors that influence it . influence the balance of gambi r . This technique of qualitative analysis is used to identify farmers' perceptions , conditions , and balance of activities based on interviews .

3.2 Location and Time of Research

Pe ine ili it ia i i carried out i Pakpak **Bharat** Regency , North Sumatra Province , which is one of the main regions for Gambian commodities . The location determination is carried out in a **purposive** manner with the meaning of the consideration that this area is the potential for the development of the plant and the potential for consideration . The research period was carried out from **April** to July 2025 , including field data collection , interviews , observation , and analysis .

3.3 Population and Sample

1.3.1   Population

Population iin this pe ine li itiiii ili iputi i:
1. Gambi farmers who carry out cultivation in Pakpak Bharat Regency .
2. Business actors or gambling collectors .
3. Agricultural extension agents and regional government officials relate to agricultural commodities .

3.3.2 Sampling Determination Techniques

This technique includes the selection of farmers who meet the following **criteria** :
- Farmers who cultivate gambier crops ,
- This is my experience of 3 years in the cultivation of ambidexterity ,
- Be irse ibe ire isponde i n.

The sample size of farmers is determined to be **50** people , the **snowball** sampling technique is used to obtain figures or parties who have in - depth knowledge about agricultural commodities .

3.4 Data Types and Sources

1. Primary Data

Private data me ir in ipe irole ih directly from ire isponde in me ivia i:

- structured interviews and structured se imi i-te ir,
- field observation ,
- isi ione ircake ,
- documentation of photo and field notes.

2. Secondary Data

Data se ikunde ir di ipe irole ih of i:

- Central Statistics Agency (BPS),
- In the Farming Department of Pakpak Bharat District ,
- Journal of Science,
- imeri ir command report ,
- Books and publications related to gambir,

3.5 Data Collection Techniques

The technical data collection techniques include:

1. Observation

Observations were carried out to look at the condition of agricultural cultivation , crop process, processing , infrastructure , as well as the social and economic conditions of the community .

2. Interview

Interviews were conducted with farmers , trade collectors, extension workers, and officials at the agricultural service using an interview guide .

3. Questionnaire

Cake isi ione ir i be iri ikani to ifarmeri to mpe irole ih data quantity i tatii f me inge inai i:

- Land area,
- Bi iaya production i,
- Production i and producti vii bags,
- Current and non - current characteristics .

4. Documentation Study

Documentation is used to provide data through national reports , agricultural statistics , regional reports , as well as other supporting historical data .

3.6 Research Variables

This pe ine lii ti ei use several variations of the abe i l that are analyzed i si s, namely:

1. **Agronomic Variables**
   - Condition of land
   - I ikli im
   - Te ikni ik budi idaya
   - Use of production input i
2. **Socio-Economic Variables**
   - Income
   - Farming experience
   - Pe indi di i kan
   - Capital access
   - Marketing Pe

3. **Development Prospect Variables**
   - Pe iluang pasar
   - Ni ilai iadded
   - Pote insi iproduction i
   - Support of government and policy

3.7 Data Analysis Techniques
3.7.1 Descriptive Analysis
Analy sisi sde ipti if scrip i used to illustrate:
- CONDITIONS OF GOODNESS CIVILIZATION
- Character iri isti cpe itani i
- Si iste im pe imarketing
- Indala and balance

3.7.2 SWOT Analysis
The SWOT analysis is used to formulate a strategic strategy for the overall balance of the picture based on:
- **Strengths** (Ke ikuatan)
- **Weaknesses** (Ke ile imahan)
- **Opportunities** (Pe iluang)
- **Threats**

SWOT analysis steps :
1. I icore deifi cation of intei mal factors and e ixte rnal eic
2. Preparation of I iFE imatrices (Intei mal Factors E ivaluati on)
3. Preparation of the Ei FEimatrix (Ei xte irnal Factors E ivaluati on)
4. Determination of the score and weight of each factor
5. Preparation of the SWOT strategy strategy matrix
6. Strategy formulation of balance sheet strategy

RESULTS AND DISCUSSION
4.1 Overview of Research Location
Pakpak Bharat Regency is a region that has agro - climatic potential that is sufficient to support the balance of agricultural commodities, including gambier crops. The topographic conditions in this area are in the mountains of Burbuki, which are not in the area of Lombardy with an altitude of 500–1,200 meters above sea level. Annual rainfall ranges from 2,500–3,000 mm per year throughout the year without providing sufficient rainfall for Roxb's growing species. Most of the people in this region depend on the agricultural sector for their livelihood. Gambi is not a main commodity like coffee or corn, but it is starting to become an important factor in many villages in certain sub - districts. Gambi 's farming business patterns are generally still traditional and traditional , accompanied by simple processing technology .

4.2 Existing Conditions of Gambier Cultivation in Pakpak Bharat Regency
4.2.1 Land Area and Production
The results of interviews and observations show that the area of gambier crops in this area is still limited with an average land size scale of 0.5–1 hectare of farming area . The duration of a Russian plant is 3–10 years with varying levels of care . The production of gambier peir hectare varies depending on the age of the plant , cultivation techniques , and the inte ince of nutrient selection . Farmers who apply the techniques of pruning , fertilization and weed control obtain better yields compared to farmers who only rely on natural growth .

4.2.2 Cultivation Techniques
Cultivation techniques that are found among farmers include :
- Planting seeds from ibenih or branches (steik) without any quality leiction.

- Fertilization is done in an irregular way .
- Pane in is carried out 3–5 times per year.

For the most part , farmers have not yet used more modern technology , which means balanced fertilization , the use of superior seeds , or the control of pests and diseases in an integrated way .

4.2.3 Processing Technology

The gambier processing process is still carried out in a traditional way , using techniques such as leaf processing , pressing , depositing , and manual pressing techniques . This technology can influence the quality of the image , especially the color , texture and texture content .

The main aspects of processing are :

- A simple and simple error
- The level of product quality variation
- Long processing time
- Mi ini i onal operational standards (SOP)

4.3 Socio-Economic Characteristics of Gambir Farmers
4.3.1 Age and Farming Experience

Most of the farmers are at a productive age of 30-55 years , with farming experience of 3-20 years . However , specific experience in the cultivation of gambling is still relatively new , so the current knowledge is still very limited .

4.3.2 Education Level

The majority of farmers i be rpe i ndi i i in primary middle school and upper middle school school . This level of personality has an influence on the ability to adopt new technology , especially in processing and marketing .

4.3.3 Income and Access to Capital

Income from farming shares for farmers is still an additional source , not the main source . Access to capital is limited to non - formal financial institutions such as brokers or loans to families . This has an impact on the slow balance of business and licensing of production facilities .

4.3.4 Marketing

Gambling marketing is carried out through local sellers using the price set by the market . Farmers have low bargaining power due to their dependence on one or two pei li i . The marketing network has not yet been integrated at the district or provincial level .

4.4 Agronomic, Social, and Economic Factors Influencing Gambier Development
4.4.1   Agronomic Factors

- Land suitability is quite high .
- Ke ite irse iiai i r good for the length of the year.
- Cultivation techniques are still traditional , so the productivity is not very beautiful.
- This is the innovation and use of superior seeds .

4.4.2   Social Factors

- Current knowledge of farmers is still limited .
- Farmers 'welfare is not yet running optimally .
- The role of extension is still not yet maximal.

4.4.3   Economic Factors

- The price of gambi ir fluctuates if.
- Limited market access .
- The processing technology is not adequate so the quality is not good.
- Government support in the form of assistance for production facilities has not yet been average.

4.5 SWOT Analysis of Gambir Development Prospects

4.5.1 Strengths

- Compatibility with a supporting agroclimate .
- The existence of land that can be expanded .
- Te idragon to ilocal rja me ili impah.

4.5.2 Weaknesses

- Technology of cultivation and processing of beautiful plants .
- The quality of the product is not yet in accordance with industry standards .
- Kei lei mbagaan farmeri lei mah.
- This is the point of capital access.

4.5.3 Opportunities

- Market demand for kate i in this machine is high.
- The trend of use of natural ingredients in the health and cosmetology industry .
- Government peiiri is support toi versi fication of bunanpe ir goods commodities.

4.5.4 Threats

- Rivalry with other gambian income regions , especially West Sumatra .
- Fluctuations in global market prices.
- Changes to trade policy .

4.6 Gambir Development Strategy in Pakpak Bharat Regency

Based on the SWOT matrices, there are several strategies of individual balances :

1. SO Strategy (Leveraging Strengths to Seize Opportunities)

- This means increasing the planting area of gambier on a potential area to meet market demand .
- Encouraging the balance of the gambier class eb i r b a t i oni s p o t e i n c i on side isa.

2. WO Strategy (Reducing Weaknesses to Take Advantage of Opportunities)

- Training and counseling on technology , cultivation and fashion processing.
- Strengthening product quality through the implementation of SOPs and quality standards .

3. ST Strategy (Using Strengths to Overcome Threats)

- Ive received the classification of derivative products in the form of pure substances and processed extracts .
- It is a joint marketing platform to strengthen bargaining power .

4. WT Strategy (Minimizing Weaknesses and Avoiding Threats)

- Providing access to investment and capital investment to farmeri.
- The establishment of cooperatives or groups of farmers as a forum for capacity building and marketing opportunities.

4.7 Discussion

The results of this research show that Pakpak Bharat Regency has quite significant prospects for the development of gambi 's crops . Although the development of image balance is still at an early stage , agro - climatic suitability provides a large opportunity for business scale development . The main obstacle is not in the technology of cultivation and processing which is still rudimentary as well as the lack of agricultural support . This is the way in which various types of previous practices have shown that the success of the agricultural industry is very dependent on product quality standards and the availability of production at the modern processing facilities . This continued market vacancy in the country has given a significant impetus to industrial balance in the global economy . If the person in charge is able to balance the structured SWOT strategy , it will become a leading commodity in the region with a real contribution to farmer income and the local economy .

CONCLUSION AND SUGGESTIONS

5.1 Conclusion

B ased on the results of the gambi ir crop plant (Uncaria gambi ir Roxb .) in Pakpak Bharat Regency , it can be concluded as follows :

1. The existing condition of gambier cultivation in Pakpak **Bharat Regency shows quite large potential** , viewed from the agro - climatic aspects , the existence of land resources , and farmers' experience in the farming sector . However , gambling cultivation is still carried out in a traditional way and has not yet been implemented in an optimal way .

2. **Agronomic, social and economic factors have a significant influence on the development of gambier businesses.** Limited current knowledge of farmers , poor access to capital , basic processing technology , as well as farmers' agricultural resources that have not yet been optimally optimized are the main obstacles in increasing productivity and agricultural quality .

3. The prospects for the development of gambier **in Pakpak Bharat Regency are** considered quite promising due to the increasing market demand for this variety and its derivative products , as well as the government's support for the commodity balance of alternatic regional commodities . If it is supported by the right inte i ntion , technology and organizational planning , gambi i can become a leading commodity in the region .

4. The **strategy for developing gambier produced through a SWOT analysis shows that strengthening cultivation and processing technology, increasing farmer capacity, product diversification, and strengthening marketing institutions** are important steps to encourage the development of gambier in a sustainable manner in Pakpak Bharat Regency .

5.2 Suggestions

Based on the conclusions above , some suggestions that can be made are as follows :

1. It is necessary to prepare a special program for balancing Gambian commodities through the provision of assistance for production facilities , superior seeds and processing technology support.

2. This means enhancing the role of agricultural extension workers in providing cultivation training and rice processing in accordance with industry quality standards .

3. Farmers need to improve the application of cultivation technology , including balanced fertilization , regular pruning , and the use of quality crops .

4. The gambier processing industry can exchange trade with local farmers through a mutually beneficial partnership pattern (offtake system) .

5. There is a need for technological investment and fashion processing technology to produce export products with export quality standards .

6. Further research is needed to understand the supply chain (supply chai) content and potential of industry balance .

7. A study of the mechanism of management of farming commodities that is most important in the management of agricultural commodities at the regional level also needs to be carried out .

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