The Analysis
of Biopharmaceutical Economic Values
of Agroforestry System of the Farm Forests:
A Case Study at Kalijaya Village, Ciamis District
and Karyabakti Village, Tasikmalaya District

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One of the medicinal plants which can be developed in farm forests is kapulaga or in international market recognized as Cardamom.

Cardamom potentially developed under agroforestry system intercropped.

This paper is to figure out the potency to develop as well as the economic value of Cardamom specifically conducted at Ciamis and Tasikmalaya Districts.

The elevation of Ciamis and Tasikmalaya districts are between 0 – 1000 MSL and between 25-800 MSL respectively, whereas suitable for Cardamom development.
This research had been conducted from June to August 2012 at Kalijaya village, Banjarsari sub-district, Ciamis district and Karyabakti village, Parungponteng sub-district, Tasikmalaya district.

The census was conducted to collect the primary data by interviewing 60 farmers (30 farmers from Kalijaya and 30 farmers from Karyabakti) and field observation.

The collected data were then classified based on the purpose.

To figure out the potency of Cardamom development, the data were then descriptively analyzed.

To find out the economic value of Cardamom, the data were statistically analyzed.
Farmers have planted Cardamom in farm forest and home gardens. 
The ownership of forest land area in Kalijaya and Karyabakti village are averagely 1.3 ha and 0.156 ha, while the ownership of home garden in Kalijaya and Karyabakti are 0.073 ha and 0.0165 ha.

Tending and fertilizing to Cardamom, as a companion crop, in the farm forests would give positive effect to the growth of the trees, but many farmers do not practice these activities as informed by 33.33 % Kalijaya respondents and 6.67 % Karyabakti respondents.

Cardamom plantation in West Java reached 5,268,468 m², whereas 1,502,045 m² was clearly harvested while 4,490,623 m² was partially harvested with total production reached 10,167,608 kg (Dinas Pertanian Tanaman Pangan Jawa Barat, 2009).
The Economic Value of Cardamom

Cardamom crops were planted in the system of agroforestry. In Kalijaya, they were intercropped with sengon trees, while in Karyabakti intercropped with manglid trees.

Sengon+Cardamom

Manglid+Cardamom
The Economic Value of Cardamom

- The farmers in Kalijaya planted Cardamom with spacings as follow: 2m x 2m, 2m x 3m, 2m x 4m and 3m x 4m made the seeds needed were 1,600 seedlings/ha.

- They assumed that the planting distance of Cardamom could not be so closed because it would make the covering of leaf of Cardamon soon. As a result, the growth of Cardamom would be bad.

- The farmers in Karyabakti applied closer spacings such as 1m x 1m, 2m x 2m, 4m x 4m and 5m x 5m made the need of seedlings bigger i.e. 2,900 seedlings/ha.

- They assumed that by planting Cardamon a lot, they would get more yield.
The costs of cardamom business consist of investment and variable/operational costs.

Investment costs consist of land rent, equipments, and taxes. Equipments and taxes were fixed cost.

The rental cost of farm forest land was purposed for paying tax to village government or so called “pancen” with the value of IDR 300/bata and IDR 250/bata for Kalijaya and Karyabakti respectively.

One bata is equivalent to 14 m².

The investment cost paid by farmers in Karyabakti was IDR 602,000/ha, while in Kalijaya was IDR 644,500/ha.
The Variable Costs of Cardamom Business

• The variable costs in Kalijaya were higher than the ones in Karyabakti, which was IDR. 7,561,646.27/ha.
• It was due to the different in labor wages whereas the labor wages in Kalijaya was IDR 10,000/day higher than the ones in Karyabakti for man, and IDR 5,000/day for women.
• The total costs of Cardamom business in Kalijaya was IDR 8,206,146.27/ha and in Karyabakti was IDR 7,348,702/ha.
• They were approximately similar with the costs for Cardamom business in Ciamis district according to Asosiasi Petani Kapol Kabupaten Ciamis (2011) i.e. IDR 10,520,000/ha.
The Incomes from Cardamom Business

- Cardamom crops start flowering at the ages of 7-8 moths and will be a juvenile seed ponds.
- These ponds would be harvested after reaching the ages of 12–13 moths so called first harvesting.
- The first harvesting is not usually executed by the farmers because of the cash received is far less than the harvesting wages.

- The next harvesting would be more valuable after reaching the ages 2 years so called grand harvesting usually on July – October and January – April.
- Under optimal growth, Cardamom can be harvested four times per year.
<table>
<thead>
<tr>
<th>Description</th>
<th>Kalijaya</th>
<th>Karyabakti</th>
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</thead>
<tbody>
<tr>
<td>Fresh production</td>
<td>5,907.39 kg/ha</td>
<td>3,577.7 kg/ha</td>
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<tr>
<td>Dry production</td>
<td>1,772.22 kg/ha</td>
<td>1,073.31 kg/ha</td>
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<tr>
<td><strong>The selling prices of fresh Cardamom</strong></td>
<td>mostly sold at IDR 6,000/kg</td>
<td>mostly sold at IDR 6,000/kg</td>
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<tr>
<td>fluctuated between IDR 4,500/kg to IDR 10,000/kg</td>
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<tr>
<td>The income of farmers from fresh Cardamom</td>
<td>IDR 35,444,340/ha</td>
<td>IDR 21,466,20/ha</td>
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<tr>
<td><strong>The selling prices of dried Cardamom</strong></td>
<td>mostly sold at IDR 40,000/kg</td>
<td>mostly sold at IDR 40,000/kg</td>
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<tr>
<td>fluctuated between IDR 28,000/kg to IDR 48,000/kg</td>
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<tr>
<td>The income of farmers from dried Cardamom</td>
<td>IDR 70,888,800/ha</td>
<td>IDR 42,932,400/ha</td>
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<tr>
<td><strong>The profit from selling fresh Cardamom</strong></td>
<td>IDR 27,658,194/ha</td>
<td>IDR 14,417,498/ha</td>
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<tr>
<td>The profit from selling dried Cardamom</td>
<td>IDR 62,682,653/ha</td>
<td>IDR 35,583,698/ha</td>
</tr>
<tr>
<td><strong>The difference income between selling dried and fresh Cardamom</strong></td>
<td>IDR 32,576,262,73/ha</td>
<td>IDR 21,166,200/ha</td>
</tr>
</tbody>
</table>

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 Reasons of Farmers Selling Fresh Cardamom

• The incomes received from selling fresh Cardamom was quicker than selling dried ones, there for the farmers could fulfill their needs instantly making such Cardamom called as cash crops meaning the products could be harvested, sold and used in the same day.
• No storage space required.
• To avoid the bustle and the risk during drying period.

Drying process of Cardamom under the sun bright needs around 3 – 4 days and it is claimed as the best method in terms of the quality of dried Cardamom.
CONCLUSION

- Cardamom is a prospective crop and potentially developed in farm forests because of this crop is included in the tolerant plants.
- It is also supported by the huge land availability and highly farmer’s enthusiasm.
- The economic value of Cardamom is exciting, relatively stable and easily sold.

So the extension and training especially postharvest handling is urgently required to increase the market value of Cardamom.
Thank you