

# Development of Small-scale Agro-tourism in the Province of Bali, Indonesia

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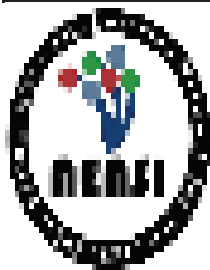
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## Development of Small-scale Agro-tourism in the Province of Bali, Indonesia

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## ABSTRACT

**Background:** Agro-tourism are emerging and developing rapidly in Bali today. It is an alternative tourist attraction which is synergizes agricultural resources and tourism. In the development, found a variety of problems that arise. Alternative solutions, regulations, and policies are needed, so that its growth can be positive and sustainable contribution to the economic development of Bali. **Objective:** This paper aims to investigate the characteristics of the current agro-tourism, identify issues and find alternative solutions to its development. Agro-tourism, as a research sample was determined by the snow-bowling method. Data were collected by questionnaires, in-depth interview, observation, and focus group discussion. **Results:** Agro-tourism in Bali are generally small-scale with an average area of 0.4 -1.5 ha and business ownership is individual. Agro-tourism evolve and become the trend of tourist arrivals is agro-tourism poly-culture plantations with civet coffee icon. Some important issues that need attention regarding the development of agro-tourism in Bali are: an increase the value -added of agro products, the preparation of regulatory agro-tourism, and the establishment of agro-tourism associations, the arrangement of facilities and infrastructure, and the training of human resources. **Conclusion:** The development of small-scale agro-tourism poly-culture plantations is still relevant to the general policy of the development of culture-based tourism in Bali. The alternative solutions are found for solving the constraints of its development need soon to be followed up in order agro-tourism can provide optimal and sustainable benefits.

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## INTRODUCTION

For the Province of Bali, the tourism sector has long been the belle of foreign exchange earner. Contribution of the tourism sector to Bali regional income from year to year increase outperformed other sectors. However, Bali's tourism development policy which tends to lead to large scale tourism and capital intensive feared to threaten local culture and environment. In many cases, the development of tourism are only guided by economic considerations alone without regard to the dimensions of the ecological and socio-cultural, often causing damage to the environment and socio-cultural problems which in turn could threaten the sustainability of tourism itself. In addition, the economic benefits of large-scale tourism are often more aligned to the owners of capital are generally not from the local community.

Bali provincial economic structure is based on comparative advantages and characteristics of the area. Three priority sectors Bali regional development, namely the agricultural sector in the broad sense, the development of the tourism sector with character culture of Bali, as well as the development of industrial sector of small, medium and cooperative. These three sectors are expected to grow in a harmonious, balanced and mutually supportive interact to contribute to Gross Domestic Product (GDP) Bali. In fact, the development of tourism growing relatively rapidly compared to other sectors, causing various imbalances, such as income inequality between sectors (primary, secondary, and tertiary), income inequality between actors (agriculture and tourism), infrastructure inequality, and others. Tourism players are generally able to get a high income, while people working in the primary sector income are very low. In general, income and infrastructure will be better in the areas of tourism development is more advanced. Integrating agriculture (agro-industry) and tourism in

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economic development planning of the region through the development of agro-tourism area for those areas which have not developed can be performed as an alternative [11]. Agro-tourism is also intended to build a harmonious relationship between tourism stakeholders and local communities (farmers) who live in rural areas of Bali [8].

Bali is one of the tourist destinations of the world by relying on cultural tourism as its core. Bali tourism development policy is formally more leads on cultural tourism based on the culture of Bali as a potential dominant. Bali Provincial Government has now set the development of green tourism through the tag line "Bali Clean and Green". The concept of green tourism can be implemented through the development of agro-tourism. Agro-tourism is in line with efforts to develop tourism without disturbing the natural environment. Another benefit of the development of agro-tourism will be able to improve the welfare of farmers, and farmers inhibit intention to conduct land conversion [15]. Agro-tourism is a selective form of tourism [1]. People interested in agro-tourism are also highly motivated to explore local cultures, and to practice ecotourism and sports tourism [2]. Agro-tourism has many emerging and began to spread in a number of districts / cities in Bali. The existence of agro-tourism destinations in quantity tends to increase from year to year. Agro-tourism development is expected to provide benefits to the ecological, cultural revitalization, and economic development in a more equitable and sustainable. Songkhla and Somboonsuke [13], also states that the agro-tourism activities had encouraged increasingly the conservation of agricultural resources, value adding of local agricultural resources, and development of agricultural technologies and Cox and Fox [3] argues that agro tourism as an activity which modifies agricultural potential.

Agro-tourism development is believed to provide added value and prosperity to the local tourism players more evenly and increase the loyalty of the people in the maintenance of a tourist destination due to the increase in participation and empowerment in investment in tourism. Agro-tourism is considered to be and is promoted as an important 'tool' for rural development in Europe. In Greece, it was 'officially' introduced through EU subsidies to Greek farmers or women's cooperatives in the 1980s and since then has grown significantly [6]. A well developed agro-tourism industry would result in a market mechanism generating additional income. Agro-tourist activities would have the added benefit of promoting sustainable agricultural practices [2].

Agro tourism is very important for rural communities as well as for urban areas. It can provide several advantages: income, employment, use accommodation, activities, natural resource conservation, recreation and education. One of the main problems for many countries is the low level of farm income. Agro-tourism intends to obtain higher standards of living for rural communities especially through increased income for people who work in agriculture [16]. The rapid development of agro-tourism in Bali this time needs to be studied and identified several issues that pose challenges and look for alternative solutions so that the development will be focused and sustained.

#### *Methodology:*

All Agro-tourism are the focus of research is agro-tourism located in the province of Bali. Agro-tourism were used as samples was determined using the snow-bowling method and gained as much as 48 agro-tourism observed in this study. The method of data collection is done by using questionnaires, in-depth interviews, field observations, and focus group discussions.

#### *Result:*

##### *Characteristics of Agro-tourism:*

Agro-tourism is one of the tourist attractions that utilize the potential of agricultural resources. Based on primary agricultural commodities which are the core business sector, the agro-tourism in the province of Bali can be classified into five types, namely: agro-tourism based-food crops, agro-tourism based-plantation, agro-tourism based-livestock, agro-tourism based-fisheries, and integrated agro-tourism.

Types of agro-tourism based-food crops so far only wetland rice farming are a touch management of agro-tourism as an attraction to the *subak* system or better known as *subak* agro-tourism. *Subak* system in Bali is very famous as a social institution in irrigation water management systems, but only in certain locations run into a tourist destination, the rest just as food production centers. *Subak* managed as agro-tourism destinations, emerging in Tabanan, particularly in the village of Jatiluwih and Wongaya Gede, Penebel District. This area is also known as the rice granary area with some high-quality rice varieties. Related to this, the UNESCO world heritage committee meeting in Saint Petersburg in 2012 set Jatiluwih Region as one of the world's cultural heritage. Meanwhile, the presence of other *subak* in Bali is increasingly threatened by the rate of conversion of agricultural land that is not under control. In Bali over the function of wetland from the year 2009-2013 average of 191.50 ha per year [14], and even the period 2000-2005 reached an average of 913.20 ha per year [5]. Likewise, agro-tourism based-livestock and fisheries not so developed in Bali. The only agro tourism-based livestock in Bali today is the White Ox Maintenance Region which is endemic wildlife, located in the village of Taro, District Tegallalang, Gianyar. The existence of a tourist attraction White Ox is also threatened by the introduction of alien species (elephant) in connection with the development of Elephant Park in the village [9].

While agro-tourism based-fishery there is only a few tours fishing pond equipped with culinary made from fish [12].

Agro-tourism based of mixture plantation is the most dominant type of agro-tourism in Bali Province. Until now, from the overall attractiveness of agro-tourism in Bali, approximately 80% of which is agro-tourism based of mixture plantation. Its presence was spread over four districts, with the highest number of destination in Bangli regency (40%), followed Gianyar (30%), Tabanan (20%), and Badung and Karangasem (5%). Most of the agro tourism located near the highway which is the main lines of Bali tourism, such as along the tourism lines of Ubud-Tampak Siring-Kintamani or Batubulan-Tegalalang-Kintamani (Gianyar and Bangli regency), tourism line of Tembuku-Besakih (Bangli and Karangasem regency), and tourism line of Pancasari-Bedugul (Tabanan regency) [12].

Agro-tourism destinations in Bali are generally small-scale with an average area of 0.4 -1.5 ha and business ownership is individual. Agro-tourism which is developing in Bali and became a trend of tourists visit this time is the agro tourism based of polyculture plantation with icons civet coffee. The term of "civet coffee" is coffee that is processed from civet droppings. Civet have a good instincts to select fruit of coffee fresh and ripe (red quotes) to eaten. In its digestion, the beans undergo a natural fermentation process and come out intact with feces. Coffee beans were then processed to coffee powder which is known as civet coffee.

Travelers who visit the agro tourism based of coffee plantations are mostly (75%) foreign tourist and the rest are domestic tourists. Based on the trip typology of tourist, in general, foreign tourists to visit the attractiveness of agro tourism based of coffee plantation as part of a package tour or travel package them into some tourist attraction that has been planned in advance. As for domestic tourists, their visit to the attractiveness of agro tourism based of mixture plantation is generally not as a visit that had been planned in advance.

#### *Tourist Attractions:*

In general, the attractions agro tourism of civet coffee which is offered begins to walk around the plants area while introducing different types of plants (cultivation and harvesting), post-harvest some crops, tester some products, and shopping. Each agro-tourism strives to provide various types of plants, whose products are there in the shopping area. Some types of plants are cultivated include: plant of coffee, cocoa, citrus, horticulture, spices, medicinal plants (herbs) and some other local plant species.

Almost every destination of agro tourism of civet coffee maintains some tail mongoose. Civet animals are maintained in a cage that can be seen directly by tourists. However, the activity of feeding for civet cannot be implemented because civet classified as a nocturnal animals while tourist visits generally occur in the daytime. In addition, there is also agro-tourism which maintains civet using a pattern ranch, which is detachable freely in the plantation of coffee bordered by a fence around the plantation area. Fencing aims to deter civet in order not to move to another area of the plantation. On this type of agro-tourism, tourists also can do trekking around the plantation area to watch wildlife civet in a natural environment, picking coffee beans that have been fermented through the digestive process animal civet.

The processing of agricultural products presented is traditional coffee processing. Stages of roasting, is the main process presented. Roasting process is critical and key processes that can create the aroma of coffee. Parameters of time and the right temperature in the roasting process will produce a distinctive aroma of coffee. Pulverization process to grind coffee using simple equipment, namely mortar and pestle also can be seen. Each traveler can participate and be actively involved in the treatment process, so travelers acquire specialized knowledge and experience that has never been done before.

Various drinks product tester are served to tourists. Type of product tester offered, such as Bali coffee, tea (various scents), chocolate, ginger ale, mangosteen powder, and lemon. Each set of tester, available 7-20 types of products that are presented for each couples or family (3-4 people) in one group. Travelers can taste each tester for free, except for civet coffee. To be able to enjoy a cup of coffee civet must pay amount USD \$ 5. Furthermore, tourists will be invited to a shopping area to see a variety of agro-products that can be used as souvenir.

#### *Value-added agro products:*

Some of agro-industrial products has been trading in agro tourism shopping area, such as tea (various scents), coffee, cocoa, spices, herbs, various spa products (soaps, perfumes, body scrub), and others. Agro-industrial products which were traded almost entirely not produced by agro tourism itself, but more manufactured by producer outside Bali. This indicates that the value-added of agricultural products have not been obtained optimally by agro tourism business unit or local communities around the area of agro tourism. This opportunity should be used by small and medium enterprises (SMEs) to get the local added value of agricultural products. Agro-tourism represents an important option to satisfy both immediate and future priorities associated with the goals of sustainable development by linking agriculture and tourism [2].



*Agro-tourism regulation:*

Regulatory policies related to agro tourism in Bali Province are still very limited. The lack of regulation has resulted in hard to provide guidance and oversight to the development of agro tourism, as well as the potential loss of tax revenue. If there are irregularities in agro tourism, which can be detrimental to the relatively difficult and slow to responded, so it can have implications for lowering the overall tourism image. Regulation is also required to set up agro tourism investments so as to avoid cannibalism investment. For example, setting the location of agro tourism which is adapted to the products and climate will result in a specification that can characterize excellence and uniqueness of agro tourism. This time it happens are the development of agro tourism who want to find similarities and completeness of growing plants without regard to the requirements of growing plants. This case just to give an example of agro tourism that is already complete has a collection of plants of the products it sells.

*Establishment of agro-tourism association:*

Currently entrepreneurs' need of agro tourism in Bali Province cannot be accommodated by both private and government so that impressed agro tourism operates independently. This happens because of the absence of an association or institution agro tourism which can be used as a place to voice their interests or the address for stakeholders who need it. If the agro tourism associations can be formed, it can serve as a forum to facilitate all the interests and solve the problems of agro tourism. In addition, it can also be used for joint promotion, overcoming war of rates and fee for the relevant stakeholders, as well as a place for sharing experiences in an effort to improve the quality of agro tourism.

*Structuring facilities and infrastructure:*

The area of agro-tourism developing in Bali is relatively narrow with an average of 0.4-1.5 ha. Structuring the garden and maintenance of existing plants in the area of agro-tourism is not optimal and generally still impressed "roughing " or just as "complementary ". It is should be arranged neatly and the main icon since become the main view and a source of knowledge for tourists who visit. Foreign tourists who visited the agro tourism destination in Bali are generally derived from non- tropical country, such as Indonesia. It is also why tourists are only familiar with a wide range of products made from raw of tropical crops but do not know the type of plants that produce the raw materials of these products. Therefore, various types of plants that exist in the area of agro-tourism will be very important for tourists to gain knowledge and experience to see firsthand the real plants that have never been known.

*Discussion:*

Development of small-scale agro-tourism in Bali province is very relevant given the total area of the island of Bali which is very narrow at only 563,666 hectares with a population of 3,890,757 inhabitants (Population Census 2010) and a population density of 690 inhabitants / km<sup>2</sup>. The existence of Bali as a national tourism icon strongly supports the image of Indonesian tourism on international level. In the future development of Bali tourism, improving the quality must become the need to get more serious attention. Small-scale agro-tourism developed at this time, the area can be expanded by inviting farmer land owners around the area of agro-tourism to join so that activity in the agro-tourism can be improved and improving farmer empowerment. The incorporation of this area also can enrich the variety and number of plants that can be offered to tourists. By leveraging existing networking is expected to be faster agro tourism developed and developing. Not the other way, every investor or individual land owners' farmer compete to create a new agro-tourism, of course, this could increase competition and require greater capital due to start from scratch and all-new, inexperienced so the chances of success will be lower.

Agro-tourism revenue largely derived from the sale of agro-industrial products which are traded in the shopping area. Almost no admission fee charged for entering the area of agro-tourism. Sometimes, agro-tourism revenues are also derived from packages of attractions offered, such as cooking class and trekking. Thus, agro-tourism provides opportunities for marketing agricultural products and a variety of variations and its derivatives. This opportunity should be used by around the local population so that the presence of agro-tourism can provide benefits to them. Agro-tourism philosophy aims to increase of Farmers' incomes and the quality of life of rural society. Therefore, the development of agro-tourism will provide the opportunity for local farmers to increase of income and lifestyle [16]. Agro-tourism also to help farmers to get some benefits by help of capitalization their own resources from agriculture, which is the main profit source [7].

Likewise, in the province of Bali, the emergence of agro-tourism can sell a variety of agricultural products with different variations, but the agricultural products traded are still largely come from outside Bali (Java). If the offender of agro-tourism can exploit the local resources of Bali then will an increase multiplier effect on other sectors, such as recruitment of employment and use of local agricultural products. This in turn will have an impact on the improvement of Bali's economy as a whole. To be able to take advantage of the emergence of agro-tourism will require human resources capable and reliable in preparing a variety of agricultural products



which become tourist demand. To enhance the agro-tourism benefits for the community in Bali it is necessary training for human resources in order to produce the processed agricultural products necessary by agro-tourism for souvenirs or direct consumption. In addition, policies and support from the government also needed so that the faster formation of the business units of agricultural products that can supply the needs of agro-tourism which was supplied from outside Bali. Rogerson and Rogerson [10], stated that the training programs and awareness-raising of local economic development (LED) decision-makers is needed in order to catalyze and support policy initiatives for addressing skill deficiencies around product development and the running of small tourism business enterprises.

Governments and institutions of agro-tourism associations each have a strategic role in order to improve agro-tourism. Agro-tourism association was necessary and role as an institution that can facilitate and mediate the needs of all members of agro-tourism. Thus, the association of agro-tourism is an urgent need to be realized. The government together with agro-tourism association should always educate and provide a firm policy to the investor or owner of agro-tourism that the establishment of agro-tourism according to the rules, so as to create a true agro-tourism, advanced, and sustainable. For example, permit the location of agro-tourism with civet coffee icon should be given if established in locations that meet the requirements for growing coffee plants. This will provide valuable experience and true to tourists related coffee plants (growing conditions, agro-climate, cultivation, harvesting, and post-harvesting). In addition, it is also simultaneously support the protection which is a pretty effective way for the protection of indications of origin (Protected Designation of Origin) and the protection of geographical indications (Protected Geographical Indication) against certain species of plants and animals. The example which is quite representative about this is agro-tourism *salacca* in the Sibatana village, Karangasem who had known as the best areas for producing *salacca* in Bali. Conversely, if the location of the agro-tourism established in any place, it is not acquired knowledge and experience actual, accurate and true, because most likely the coffee plants are grown only in the form of a pot and just as a sample only. This of course does not give the right knowledge and experience to tourists. It is not profitable in the long term so that agro-tourism will not be sustainable. Here, the role and the firmness of government and related associations to always provide guidance and oversight so that tourism can provide optimal and sustainable benefits in the long run. Eshun et al [4], agro-tourism is a complex phenomenon. Thus, there is the need for a multi-stakeholder approach.

The higher diversity or diversity of plant species in an agro-tourism will become an increasingly valuable capital in an effort to bring in visitors. This perception became the inspiration for almost every businessman of agro-tourism in Bali, so they always try to complete the collection of plants. On the other hand, did not realized that not all of the collection of plants can be grown in any location, its meaning that plants require a specific habitat that can grow normally. Therefore, it should not be all agro-tourism have a lot of plants and same type. Rather, an adjustment to the conditions of growing plants in an area will provide specific characteristics and uniqueness icon agro-tourism and can be excellences of each agro-tourism. If every agro-tourism has the excellences of each, the competition between agro-tourism not is tight and even on the contrary, will be complementing each other among agro-tourism.

Several developed and developing agro-tourism has been recruiting local manpower in considerable numbers. But there are still some agro-tourism tends to utilize family members as an employees because of agro-tourism is managed by the family management. The role of labor in general is to serve tourists in providing, presenting a product tester and guiding in the shopping area. As for tourist guides in the area of the plants of agro-tourism, mostly carried out directly by the guide that leads the tourists. This will cause the diversity of interpretation in providing an explanation of the various plants owned agro-tourism. This condition requires the development of human resources involved in the agro-tourism of relevant government agencies and associations so that there is an understanding of agro-tourism standards for guides on the knowledge of plants, processing and products in agro-tourism. But quite a lot of agro-tourism also has advanced, so since the tourists arrived in the parking lot has been handled and guided by a trained and skilled workforce owned agro-tourism.

#### *Conclusion:*

Development of small-scale agro-tourism poly-culture plantations is still relevant to public policy development of culture-based tourism in Bali. Agro-tourism has been able to increase local employment. In its development, still encountered some obstacles that need to be followed up in order agro-tourism can provide optimal and sustainable benefits. Some solutions are offered related to increase in the value added of agro products, drafting regulation agro-tourism, agro-tourism association formation, structuring facilities and infrastructure, and training of human resources.

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## REFERENCES

- [1] Bršćić, K., 2006. The Impact of Agrotourism on Agricultural Production. *Journal of Central European Agriculture*, 7(3): 559-563.
- [2] Catalino, A.H. and M. Lizardo, 2004. Agriculture, Environmental Services and Agro-Tourism in the Dominican Republic. *electronic Journal of Agricultural and Development Economics (eJADE)*, 1(1): 87-116.
- [3] Cox, L. J. and M. Fox, 2003. Agriculturally Based Leisure Attractions. *The Journal of Tourism Studies*, 14(1): 49-58.
- [4] Eshun, G., A.Y. Segbefia, J.Y. Acheampong, 2014. The nexus of Agrotourism and Marketing: A case study of poultry farms in Kumasi Metropolis, Ghana. *African Journal of Hospitality, Tourism and Leisure*, 3(2): 1-12.
- [5] Iqbal, M., 2007. Phenomena and Local Government Policy Strategy Conversion Control Wetland in Bali and West Nusa Tenggara. *Analisis Kebijakan Pertanian*, 5(4): 287-303.
- [6] Kizos, T., T. Iosifides, 2007. The Contradictions of Agrotourism Development in Greece: Evidence from Three Case Studies. *South European Society & Politics*, 12(1): 59-77.
- [7] Mazilu, M. and A. Iancu, 2006. Agrotourism - an Alternative for a Sustainable Rural Development. *Geotour (October)*: 162-165.
- [8] Pranadji, T. and R.N. Suhaeti, 2012. The Future of Bali's Rural-Agriculture in a Regional Development Planning Perspective. *Analisis Kebijakan Pertanian*, 10(3): 225-238.
- [9] Pujaastawa, I.B.G., 2011. Co-modification Environmental and Implication against Socio-cultural System in the village of Taro. Ph.D Dissertation. Study Program of Cultural Studies, Udayana University, Denpasar.
- [10] Rogerson, C.M. and J.M. Rogerson, 2014. Agritourism and local economic development in South Africa. In: Rogerson, C.M. and Szymańska, D. Editors, *Bulletin of Geography. Socio-economic Series*, No. 26, Toruń: Nicolaus Copernicus University, pp: 93-106.
- [11] Satriawan, I.K., 2005. A Design of Decision Support System for the Integration Model of Tourism and Agro-industry in the Economic Development Planning of Jembrana Regency. Ph.D. Dissertation. Graduate School of Bogor Agricultural University, Bogor.
- [12] Satriawan, I.K., I.B.G. Pujaastawa, I.M. Sarjana, 2013. Using of Small Scale Agriculture Land for Agro-Tourism Destination in Bali Province. *Proceeding of the 5<sup>th</sup> Asian Conference on Precision Agriculture (ACPA)*, June 25-28, 2013, Jeju Korea, 236-243.
- [13] Songkhla, T. N. and B. Somboonsuke, 2013. Interactions between agro-tourism and Local Agricultural Resources Management: A Case Study of Agro-tourism Destinations in Chang Klang District, Southern Thailand. *Discourse Journal of Agriculture and Food Sciences*, 1(3): 54-67.
- [14] Statistic of Bali Province. 2013. Land According Its Use in the Province of Bali in 2013. *Catalog BPS 3311003.51*. p: 14.
- [15] Suyatiri, N.M., 2012. Empowerment of Subak through "Green Tourism" for Supporting Sustainability Agricultural Development in Bali. *SEPA*, 8(2): 51-182.
- [16] Zoto, S., E. Qirici, E. Polena, 2013. Agrotourism - A Sustainable Development for Rural Area of Korea. *European Academic Research*, 1(2): 209-223.



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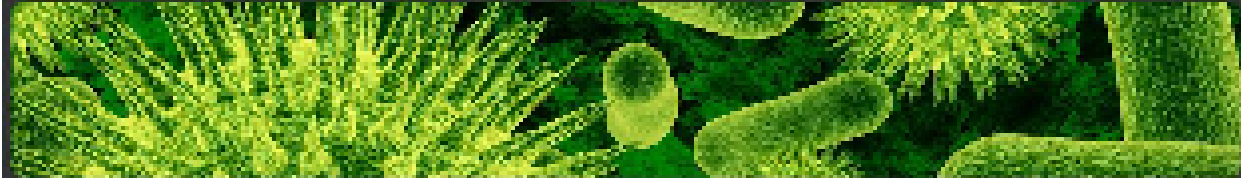
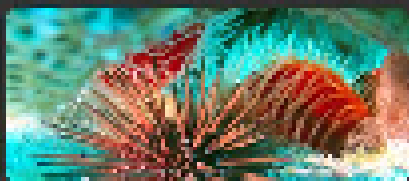
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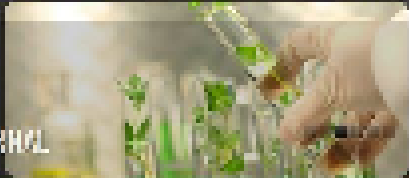
# Advances in Environmental Biology

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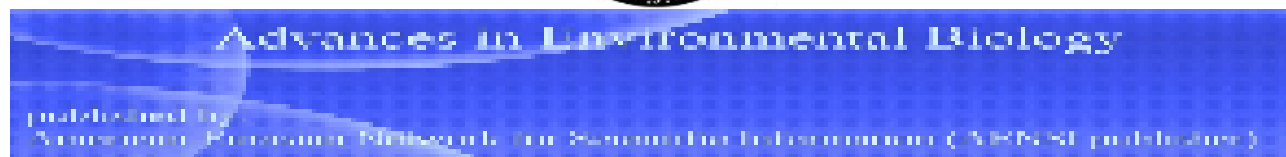
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