

# An Ethnobotanical Tobacco (*Nicotiana tabacum* L.) in Indonesia. A Review

Jati Batoro\*, Gustini Ekowati

Biology Departement Faculty of Mathematics and Natural Sciences Brawijaya University, Jl. Veteran Malang, East Java, Indonesia

**Abstract** Tobacco plants (*Nicotiana tabacum* L.) have important role to supports economical local people, development, agricultural and absorbing labors in Indonesia. How to suppress nicotine content that includes as harmful components in the study of high biotechnology. The collected data were supported bases references and survey. Tobacco uses are having an excellent significance in supporting socio-cultural ties, especially indigeous ancestors in strengthening the unity of society in Indonesia. Thus, tobacco product also has negative effects for human's health. So that, it is requires right solution to solve the problem toward that tobacco product.

**Keywords** Ethnobotany, Tobacco, Local knowlwdge, Indonesia

## 1. Introduction

Limitation of ethno-botany begins with Hanshberger in 1895, have a very simple meaning relating to the traditional utilization of primitive society [13]. Ethnobotanical tobacco study is aimed to know the society's knowledge about useful plant diversity, exploitation methods, history, their management and adaptation technique related to environment in Indonesia. In the dictionary of biology essay, [9] Rifai said that ethnobotany is defined as the scientific science for human use as well as cultural relations tribes. The definition implies very complex, abroad, deep and interdisciplinary science involving ethnic and cultural relationship of man to nature of plants in the environment. In reviewing ethnobotany that related to ethnic and botany, it must be understood about the knowledge of anthropology, history, botany, linguistics, medicine, environment, agriculture, toxicology, economic production, etc. As well as ethnographic knowledge (description of the nature, cultural history tribes) and ethnology (scientific reviewers nature of the cultural history of tribes). In order to avoid confusion and facilitate the implementation and development. [7, 14] provides a simple restriction that ethnobotany is a branch of science that explore the relationship of human culture and natural surroundings of preferred plant is the perception and conception of culture community groups. Therefore, the study of ethnobotany is related to human dependency relationship with plants either directly or indirectly. The examples of direct needs are food, clothes, shelter and

indirect is oxygen demand (O<sub>2</sub>).

The growing of human civilization makes the increasing of dependence on plants, the implication affects to the needs such as clothes, houses, food, and health. Ethnobotany research approach is needed to integrating between natural science and social science (anthropology). There are two approaches were used in this research, qualitative approach and quantitative approaches. Both approaches can be done together to make this reseach more powerful and complementary each other or stands alone. [5, 14] describes the data of ethnobotany is the data on botanical knowledge society and social organizations, not data of botanical taxonomy. Therefore, a study of ethnobotany should reveal conceptual rules, categories, codes and rules of local cognitive (emic) is consistent and must be proven by scientific conceptual (ethic). As a multidisciplinary study, ethnobotany requires to provide the best solutions and to act quickly and precisely (praxis) in various social situations to understand, interpret, identify on natural resources. The data was taken drawn from the society are varied and can be change anytime, necessary techniques was needed, strategies for informant interviews, to got obtain valid results and objective.

The exelence of Ethnobotany research as stated by [8, 12] was able to reveal to the indigenous knowledge of a community or ethnic group on the management and utilization of resources and the effects of plants in the environment. The study is expected to reveal potential ethnobotany and economic role, a useful plant species, the potential and the role of the conservation and its impacts.

Human has an important role in understading about the environment where they lived, although in tradional society or industrial society. As an individual and social creature, humans are depend on social and cultural development.

\* Corresponding author:

jati\_batoro@yahoo.co.id (Jati Batoro)

Published online at <http://journal.sapub.org/als>

Copyright © 2017 Scientific & Academic Publishing. All Rights Reserved

When the human civilization become higher, the human dependence on primary or secondary needs is increasing as well. Ethnobotanical study in multidisciplinary studies are not only limited in basic botanical discipline and applied science such as agronomy, animal husbandry, and fisheries, but also must involving economic production and marketing system. It is different from economic botany that studies how plants have properties and economic benefits for society. Ethnoecology complementary are quite different in scope but integrated with the knowledge of the community to serve as the basic for the development of science and technology.

## 2. The History of Tobacco in Indonesia

Smoke was first introduced by American-Indian tribes, Maya and Aztec for ritual purposes indigenous ancestral worship of gods and spirits. After Christopher Columbus 1492 and the European colonists voyage in a new world discovered America lands, they try to smoke Indian cigarettes that made from tobacco leaves, then the smoking habits spread in Europe. Tobacco names are from Spain "Tobaco" and in English "Tobacco". By the French, Portuguese, and Dutch aristocrats, tobacco was introduced to Indonesia to be cultivated, developed, and sold. In the beginning of 17 th century, smoking habits spread in whole world and began to enter Islamic countries and tributary. A few of tobacco-producing regions in Indonesia that is famous for its distinctive aroma and flavor are: Deli tobacco (Deli-Maatschappij) cigar producer, Yogya-Klaten-Solo (Virginia-Vorstenlanden), srintil (Kedu-Besuki and Temanggung). Virginia - East Lombok, Madura tobacco, likewise in the form of chooped tobacco packaging utilizing bamboo and teak leaves, Jati (*Tectona grandis*).

At first, tobacco was developed in Dutch's land plantation and traditional farmers. While in the development by Indonesian tribes are appreciated as a cultural custom form that aimed to be an order of social life as symbol of family togetherness and unity. The meaning of packaging in every cultural custom that cannot be separated from tobacco materials. As an example, Malayan tribes had a custom with life's rules Sekapur Sirih that covers materials: sirih (*Piper betle*), pinang (*Areca catechu*), lime, gambier (*Uncaria gambir*), and tobacco (*Nicotiana tabacum*). Betel nut (*Piper betle*) symbolizes tacts, honor, brotherhood, and respect to the agreed rules, while tobacco have bitter flavor that symbolize willingness to sacrifice and resist temptation. In Maluku Indonesian traditional ceremony, Mako-Mako Dance, to celebrating the war victory or celebrating the success of a person or group in the form of dish (betels, *Areca* nut, lime, and tobacco). Thus, Javanese society using tobacco for many ceremonial custom, for example is "nyusur" habits: Suruh, Sirih (*Piper betle*), Jambe (*Areca catechu*), lime or injet and Mbako or Sata (*Nicotiana tabacum*) were carried out by old people in their daily and in the other activities. Actually, ethical use of tobacco's quid can cope with various disease such as gum disease and toothache. The

container to processing the fringe is special, and throwing the rest of the fringe is called Paidon fringe. The functions of tobacco are giving support in maintaining health, and can be used for treat snake bites, mosquitoes, leeches, lintah (*Hirudo medicinalis*, *Hirudo zeylanica*), millipedes, bees (*Aphis* spp.), etc.

Kretek cigarette production was started by an Tionghoa bussiness as trading in Kudus, Central Java. The history of tobacco cigarette started by **NitiseMITO** in 1906-1908 as legal trading and appear with brand "Tjap bal tiga" as the milestone kretek cigarette industry in Indonesia [2]. Cigarette divided into few types based on the wrapping material rolled. Cigarettes made from corn, kawung made of palm leaves, cigarette paper and cigars are made from tobacco leaves made from palm leaves. The development continued based on the cigarette's materials such tobacco leaves, cloves, Klembak (*Rheum officinale*), and frankincense. Cigarettes that growing in Indonesia are a mixture of tobacco and cloves. Cloves' smell have few variant effects of healing and causing illness of the respiratory tract. A few ingredients that containing inside tobacco leaves are nicotine, tar, cadmium that can causing illness for organs. Nowadays, cigarette production primary as social trend including mild, cloves, and cigars. But a few of traditional society still using klobot cigarette, siong, tengwe, and ngutis.

## 3. Solutions for Cigarettes

Many researchers, especially health expert giving more emphasis on the dangers conclusions from smoking, for examples cigarettes are causes cancer, stroke, heart disease, impotence, miscarriage, and wrinkles. On the other hand, cigarette is an important industrial commodity that can increase economy, development, and labor absorber. To avoid economical decrease, especially for tobacco farmers, tax, amount of cigarette factories, cigarette users, decrease unemployment, and declining industrial collapse. [1] Prof. Dr Sutiman of the Department of Biology, Brawijaya University, provides solutions related to the smoking problems based on local knowledge and how to minimize the toxic components, with reducing negative impacts and strengthen the positive impact and eliminate free radicals from cigarette smoke. Free radicals can be anticipated by consuming vegetables and fruits. Another solution that must be doing about the tobacco is how to suppress nicotine content that includes as harmful components in the study of high biotechnology, so the negative impacts can be minimized.

## 4. Botany Tobacco (*Nicotiana tabacum* L.)

Tobacco plant (*Nicotiana tabacum* L.) is a public plant, it is known in tobacco plantations as Bako (Sunda), Mbako,

Sata (Java). However, the names of tobacco in each region as different, for example: Bima (tambaku), Bajo (tambako), Buru (embaku) [6]. This plant is an annual plant and belongs to the group genus *Nicotiana* and familia Solanaceae. Habitus upright shrub-herb up to 2.5 meters tall, round rods (terete). Leaves sitting on the trunk, the bottom gather (rosette), the ends of the spiral composed; single leaves lanceolate shape to an elongated, pointed tip, short-stemmed, almost hugging the stem. Tobacco Tengger tribal, flowers at the end (terminal) or a single panicle [3]. Greenish petals and white tubular crown-reddish hair and serrate, stamens 5 (Figure 1B), fruit in box. This plant comes from the tropical and subtropical regions of America and many varieties, are now commercially cultivated worldwide. Distribution from a height of 1 m - 1800 m above sea levels. Tobacco plants are known to contain a toxin called nicotine (N10 H14 N2) is a type of alkaloid pirinide. Tobacco leaves contain 0.6 - 9% alkaloid nicotine, 1-methyl-2 (3-pyridyl) pyrrolidine, nicotianin or tobacco camphor and the semen contain cat oil (lynalie). Ecology, the best condition for Tobacco growth are an average temperature of the least 25°C, tropical lowland up to 1-1800 m above sea level, that mixures clay and sand with a good water-retairing capacity. Production of tobacco to began after 100 day harvesting and depent of cultivar variation.



**Figure 1.** Tobacco Tengger tribal plants (*Nicotiana tabacum* L.), 1800 m asl. A. Habitus B. Flowers tobacco (Photo: J. Batoro)

## 5. Benefits of Tobacco as a Drug and Toxic Materials as well as Connoisseurs

Tobacco plant is used mainly as an ingredient of cigarettes, cigars (cerutu), chew of *Piper betle* (susur) and can be used as insecticides and drugs. Tobacco has an important meaning in Indonesia epecialy in tax revenue (excise), commodity material exports to various countries. For the people in the various tribes strongly support the family economy (tobacco farmers), cigarette factory workers as well as cultural activities. For example, a traditional Javanese related events both at weddings, circumcision, ritual *nginang* (tobacco, gambier, injet, Sirih (*Piper betle*) it is important and sacred. Tobacco leaf by traditional society are using for cure wounds, ulcers, toothache, m snake bites medicine, wasp, repellent drowsiness and repel mosquitoes [4]. Most modern society from personal interviews it used to make a friends and social values. Besides as a medicinal ingredient of tobacco leaves,

it also can be used as insecticides such as killing gecko, lizard, repel insects and to humans can cause a disruption in the body's organs. According to [11] grouping to plant drugs and toxins are difficult and confusing to be distinguished, even a plant known as toxic plants sometimes also as a medicine. Several authors of tobacco plants classified as medicine, and other clasified it into plant toxins, or industrial commodity. Poisoning means possessed chemical that disrupts the physiological processes so it caused illness to the body. The character and intensity depend on the type of venom toxins, the amount and duration of the organism were poisoned as well as the level of a person's immune system. Study of toxins called toxicology. However, there is little poison is a connoisseur of materials such as cigarette consumption of tobacco (*Nicotiana tabacum* L.), cocaine (*Papaver somniferum*) and marijuana (*Cannabis sativa*). Although these materials are prohibited even given a warning still consumed by some members of the public. Additional tools other than parts of a plant that can also contribute to the industry are nodes that causing enjoyment, latex, hair cottonseed (*Gossypium* sp.), hair pieces kapok randu (*Ceiba petandra*), glandular hairs tea leaves (*Camellia sinensis*) as a flavoring, medicine and the taste of tea.

**Finding:** How to minimize or solution the toxic components, with reducing negative impacts and streng then the positive impact and eliminate free radicals from cigarette smoke. The study of high biotechnology must be do so that the negative impacts can be minimized.

## 6. Conclusions

Tobacco plant, called *Mbako* (*Nicotiana tabacum* L.) have important role to supports economical, development, and absorbing labors in Indonesia. Tobacco uses are having an excellent significance in supporting economic, socio-cultural ties, especially indigeous ancestors of people in Indonesia.

## ACKNOWLEDGEMENTS

We would like to thanks Prof. Sutiman B. Sumitro, and for his editorial advice publication support, Faculty for sciences of the university of Brawijaya Malang Indonesia for the financial funding.

## REFERENCES

- [1] Anonymous, 2004. Sutiman Bambang Sumitro. <http://www.jpnn/c5/irq/> diakses tanggal 13 Desember 2014.
- [2] Anonymou, 2011. Rokok Kretek Indonesia. [http : Sejarah Bangsa Indonesia](http://www.sejarahbangsa.com). Ward Press. Diakses tanggal 4 Mei 2015.
- [3] Backer, C.A, & Bakhuizen Van Den Brink R.C.f, 1968. Flora of Java. Vol. II. (Spermatophytes Only) N. V. P. Noordhoff. Groningen- The Netherlands. p. 480.

- [4] Batoro, J., Setiadi, D., Chikmawati, T., & Purwanto, Y. (2013). Pengetahuan Tentang Tumbuhan Masyarakat Tengger di Bromo Tengger, Semeru Jawa Timur. *Jurnal Wacana*, Vol. 14, p. 1-10.
- [5] Cotton, C.M, 1996. *Ethnobotany: Principle and Applications*. John Wiley & Sons. Chichester, New York, Brisbane, Toronto, and Singapore.
- [6] Heyne, K. 1987. *Tumbuhan Berguna Indonesia*. Jilid III. Terjemahan Badan Litbang Kehutanan. Jakarta. Pp 1724-1741.
- [7] Hoffman, B & T Gallaher, 2007. Importance Indices in Ethnobotany. *Ethnobotany Research & Applications* 5: 201-208.
- [8] Rambo, A.T. 1983. *Conceptual Approaches to Human Ecology*. East-West Environment and Policy Institute, East-West Center, Honolulu, Hawaii. USA. Research Report 14: 6. pp 1-26.
- [9] Rifai, M.A. 2004. *Kamus Biologi*. Pusat Bahasa Departemen Pendidikan Nasional. Balai Pustaka, Jakarta.
- [10] Sheil, D.R.K. Puri, I.Basuki, M. van Heiizt, M. Wan, N. Liswanti, Rukmiyati, M.A. Sardjono, L. Samsuodin, K. Sidiyasa, Chrisandini, E. Permana, E.M. Angi, F. Gatzweiler, B. Johnson & Wijaya (2004). *Exploring Biological Diversity, Environment and Local Peoples Perspectives in Forest Landscapes. Methods for A Multidisciplinary Landscape Assessment*. Bogor, Indonesia: Center ForInternational Forestry Research (CIFOR).
- [11] Tyler, V.E, Brady, L.R, Robbers J.E, 1976. *Pharmacognosy*, Printed in the United State of America.
- [12] Waluyo, E.B dan Rahayu M. 2011. Studi etnobotani masyarakat Melayu di sekitar kawasan PT. Wirakarya Sakti, Propinsi Jambi. *Valuasi Hasil Hutan Bukan Kayu Kawasan Lindung PT Wirakarya Jambi*. Jakarta : LIPI Press.
- [13] Waluyo, E.B. 2004. *Pengumpulan data etnobotani*. Pusat Penelitian Biologi Bogor-Indonesia. LIPI.
- [14] Waluyo, E.B. 2011. Kisi – Kisi Penelitian Etnobotani Yang Ideal. Disampaikan pada Seminar Nasional Penggalang Taksonomi Indonesia (PTTI), tanggal 12 Oktober 2011 di Bedugul Bali.