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TRADITIONAL BEE HONEY HARVESTING IN WEST TIMOR, INDONESIA

(Pemanenan Madu Secara Tradisional di Timor Barat, Indonesia)

HERU BAGUS PULUNGGONO

Department of Soil Sciences, Faculty of Agriculture – IPB
Jl. Raya Pajajaran – Bogor
Telp/Fax (0251) 312 642 e-mail: soilipb@indo.net.id

ABSTRAK

Studi tentang pemanenan madu secara tradisional dalam hal kondisi sosial – lingkungan telah dilakukan di pusat penghasil madu di Amfoang Selatan, Kabupaten Kupang dan Mollo Selatan dan Utara, Kabupaten Timor Tengah Selatan. Metode yang digunakan dalam studi ini adalah kombinasi survei lapang dan interview terstruktur. Dari hasil penelitian ini, menunjukkan bahwa penghasil madu umumnya daerah terpencil dan hutan tempat pohon madu merupakan hutan tutupan adat. Distribusi pohon madu berbeda antara daerah tinggi dan daerah rendah. Pohon madu yang umum ditemui antara lain *bonak* (*Tetrameles nudiflora), kabesak* (*Acacia leucophloea), neke* (*Gossampinus malabarica*), *nitas* (*Sterculia foetida*), *angkai* (*Albizzia chinensis), beringin (Ficus benyamina)* dan kapuk (*Ceiba pentandra*). Musim panen madu ada dua yaitu Juni - Juli dan September - Oktober. Nektar dan polen umumnya berasal dari ampupu (*Eucalyptus urophylla*) dan hue (*Eucalyptus alba*), jambu air (*Eugenia spp*) dan kosambi (*Schleicera oleosa*). Pemilik pohon madu ini secara tradisional berpartisipasi dalam menjaga hutan. Pemanenan, konservasi dan distribusi pohon madu masih dilakukan secara adat. Hasil madu mempunyai kontribusi yang cukup penting bagi penduduk untuk memenuhi kebutuhan hidupnya.

Kata kunci : tradisional, pemanenan, madu, dan *fanik*.

INTRODUCTION

Traditional bee honey harvesting in West Timor as source of honey and beeswax has been giving important meaning to the local people who get involved to the activity for supporting a part of their necessity. Wax, together with sandalwood and dye-wood, had been one of Timor's export products for centuries. Moreover, in the former days the region's borders frequently moved with place where the bees made hives (Ormeling, 1956). Though the product of beeswax is nowdays sharply decreased and only being used locally for lighting in hut of *ladangs*, honey as the main product of bee honey harvesting still economically gives significant contribution to the local people -in addition to their main income from *ladang* and garden cultivation for fulfilling their necessity.

To date some of the remaining places of former day bee honey producers such as Fatumonas, Lelogama, Bonmuti, Binafun and Bitobe villages of South Amfoang district, Kupang regency; Nenas, Noebesi, Lil'ana, Nunbena and Fatumnasi villages of North Mollo district, and Loli village of South Mollo district, South Central Timor regency are still well known as central producers of honey. Bee honey is a valuable non-timber forest product in the villages mention above.

The harvesters of bee honey traditionally have participation in conserving forest, at least by rearing the forest plots where bees made hives. They can be hoped to conserve the environment surrounding the forest as well, especially vegetation areas that have function as food source for bee honey either nectar or pollen. This study aims to know the present socio-environmental condition of traditional bee honey harvesting as one of the non-timber forest products in Kupang and South Central Timor regencies, West Timor of Indonesia.

METHODS

The study area was comprised of the villages within South Amfoang district of Kupang regency, North and South Mollo district of South Central Timor regency and the forest surrounding the villages. Administratively, the study area is located in the Kupang and South Central Timor regencies, East Nusa Tenggara Province, Indonesia.

The socio-environmental condition informa-tion was obtained by field survey and interview. The traditional relationship between people and bee honey harvesting was obtained by structured interview through interviewing key- and primary informants who are the villager, conducted in 1992 – 1994, and 1999 in Lelogama, Fatumonas villages of South Amfoang district of Kupang regency; Fatumnasi and Nenas villages of North Mollo district, and Loli village of South Mollo district of South Central Timor regency. The key- informants are former *fettor* (district head in the local government administration before 1960s), village leaders, clan leaders and religion leaders.

RESULTS AND DISCUSSION

A. The Honey Producing Areas

The main producers of bee honey in South Amfoang district, Kupang regency are Bonmuti, Binafun Bitobe and Fatumonas villages that are located at nearby forest on hilly - mountain region with a range of 500 - 1000 m above sea level. Whereas the biggest owners of *fanik* (tree that bears beehives) which produces greatest honey in the district are living in Leloboko and Lelogama villages. In North Mollo district, South Central Timor regency, the main producers of bee honey are Nenas, Noebesi, Nunbena and Lil'ana villages. While the biggest owners of *fanik* is living in Fatumnasi village. The villages of Noebesi, Nunbena and Lil'ana are located in hilly - mountain region with an elevation range of 500 - 1000 m, while Fatumnasi and Nenas villages have elevation about 1300 m and 1100 m respectively. The other main producer of bee honey that is well known in South Central Timor regency is Loli village of South Mollo district. Loli village is situated in lower region with an elevation of about 350 m.

The honey producing areas were formerly isolated areas where situated in interior of the regencies. Some of the villages above such as Bitobe, Fatumonas, Lil'ana and Noebesi can not be traveled by vehicle in rainy season, even though presently the local government has been developing many roads to open the interior regions.

The *faniks* are present whether in private lands or in state forests. In South Amfoang and North Mollo districts, the *faniks* are abundant in state protection forests of the Mutis - Timau forest complex. In North Mollo district the *faniks* are abundant in Fabinesi and Siuf bonak forests of Lil'ana village; Tailto forest of Nunbena village; Ueknib forest of Noebesi village; and Oel'upun forest of Nenas village. While in Loli village of South Mollo district, the *faniks* are abundant in production forest of Usbani forest of the Laob - Tunbesi forest complex and in private lands.

The forests were mainly former customary forests (*hutan adat*) as prohibited forest (*tala*). Since 1986, the forests have been turned into state forest, however, the local people are still allowed to harvest bee honey like in the previous time.

B. The Common Faniks

Wild bee that produces honey in the research areas is *Apis dorsata* F. The bee usually prefers specific tree species to make hives. According to the field observation and interview, in high elevation regions of South Amfoang and North Mollo districts, beehives are frequently found hang on branches of many trees as tabulated in Table 1.

Meanwhile in low elevation region like Loli village of South Mollo district, beehives are frequently found hang on *kabesak*, *mangga hutan*, *neke*, *bonak*, *nitas*, *beringin* and kapok (*Ceiba pentandra*) trees. The *faniks* distribution above shows those species of the trees differ between high region and lower region because topo-sequence of trees distribution is naturally different. The difference is shown by occurring of *kabesak*, *mangga hutan*, *neke* and kapok trees in the lower region.

Why are beehives abundant in specific trees and in other trees are few or can not be found? The author's field observation revealed that the condition likely depends on trees' condition that can provide protection to beehive from bio-natural enemy, and area nearby enough source of food. That is why big and tall trees are preferred than small and short trees. Trees have good or many branches which bear rather open canopy are more preferred than trees have few branches due to better shadow against sun-light and giving protection to strong wind. These fact is concordance with Dutta *et al.* (1985) whose revealed that *Apis dorsata* bees likely prefer make beehives on branches of tall trees which have rather open canopy in forest or frequently on quiet place and inaccessible high perches. However, if the distance is far away from source of food, there are on those trees have no beehives.

Table 1. Tree species usually bear beehives in high elevation regions of South Amfoang and North Mollo districts

Tree species	Number of beehives	
	Abundant beehives	Rare beehives
Bonak (*Tetrameles nudiflora*)	x	
Kabesak (*Acacia leucophloea*)	x	
Neke (*Gossampinus malabarica*)	x	
Taupi (*Nauclea orientalis*)	x	
Nitas (*Sterculia foetida*)	x	
Beringin (*Ficus spp*)	x	
Aklaob (*Canarium asperum*)	x	
Nisa	x	
Nismetan	x	
Angkai (*Albizzia chinensis*)		x
Ampupu (*Eucalyptus urophylla*)		x
Ajaub (*Casuarina junghuhniana*)		x
Kiutasih (*Albizzia lebbeck*)		x
Kemiri (*Aleurites moluccana*)		x
Hue (*Eucalyptus alba*)		x
Jambu air (*Eugenia spp*)		x
Samara (*Alstonia scholaris*)		x

C. Harvesting of Bee Honey

1. Harvesting Time

In the region where authority of customary (*adat*) officials is still acknowledged such as Bonmuti, Binafun Bitobe and Fatumonas villages (South Amfoang district) and Nenas, Noebesi, Nunbena and Lil'ana villages (North Mollo district), usually on April - May when local people saw the bees are flying and alighting on branches of trees, the *adat* officials announce prohibition (taboo) of disturbing the bees.

Harvesting time of honey is stated by highest rank of the *adat*. Harvesting time is announced by him after the lower rank of the *adat* officials reported their result of examination of one or two samples of beehives either harvestable or not. Violation to the stated time is fined by traditional law. Different types of customary fines must be paid according to the severity of offense. Generally the violator is fined to pay cattle (a cow, a pig or a horse). The animal is sacrificed to the ancestors by slaughtering this animal at *songgo* (sacred place for offering ceremony to ancestor or other spirits) witnessed by community's member in order to avoid another violation happen again in the future.

Harvesting time of the bee honey in the study area is done in two periods, i.e., June - July for great harvest, and September - October for small harvest. The September - October harvesting season is usually omitted by local people in Mutis - Timau forest complex region (Bonmuti, Binafun Bitobe, Fatumonas, Nenas, Noebesi, Nunbena and Lil'ana villages) due to giving a little product and preparation of field cultivation. However, in Loli and area nearby, September - October harvesting is still done because here honey is sold more expensive about twice up to three times than that at others producing areas above.

Non-harvest seasons in September - October gives important ecological contribution to preserving of the bees. Owing to that the bees have possibility of producing brood and their brood can survive. Whereas if bee honey is harvested, probably some of bee colonies will be destroyed by fire and smoke. Moreover, because the broods are also collected, the brood will be completely destroyed.

2. Traditional Ceremony of Harvesting Bee Honey

There are traditional customs relating to traditional bee honey harvesting in the bee honey producing area. The traditional customs occurring in the study area are as follows.

a. Fatumonas Village

In June - July harvesting season in Fatumonas village each family clan that can live in other village or other distric who has *faniks* makes traditional ceremony to offer the ancestors by slaughtering a horse and eating the meat in order to that the harvesting will produce honey more abundant. The horse is sacrificed at *songgo* where the *adat* officials of Fatumonas come from. The animal from violator is slaughtered here too. This event takes turn to each family clan member every year.

b. Nenas Village

In Nenas, before harvesting honey, the local people make traditional ceremony at *songgo* in hilly area of the Mutis mountain by slaughtering an animal (a pig or a cow). The meat of slaughtered animal is eaten together with rice on leaf of the tree (a plate is prohibited). Leaf of the tree is symbol of beehive. Putting rice on the leaf aims to make honey or beehive more abundant next year. After eating, they go to the spring which is already chosen by the *adat* officials to take water. The water is poured to the *songgo* in order to invite honey. After the traditional ceremony was done, they go to harvest honey. When harvesting season was finished, they make traditional ceremony again to close the harvesting season. Ritual of the closed ceremony is same as the opening ceremony.

c. Nunbena, Lil'ana and Fatumnasi Villages

Before harvesting of bee honey is done, the local people make traditional ceremony at *songgo* which is located in Fabinesi forest where the bee honey is produced. In this occasion they slaughter a pig with red feather or a chicken with striped color (black and white) to offer the ancestors. The meat is eaten together. When harvesting season was finished, they make big offering ceremony at *songgo* of *sonaf* (palace) of *fettor* for offering honey to the customary authority. It seems that the offering honey to the *fettor* as a fee of community to the customary authority as the land owner of the region. The traditional ceremonies are mastered by *anak atobe*, one member of the *adat* officials who has duty as master of traditional ceremony in the region.

In the offering ceremony at *songgo* of *sonaf* the *fettor* makes party by slaughtering a cow to make cuisine to appreciate the community. The traditional ceremonies at *songgo* are still done because the local people still belief that the product of honey is going to become little, if the traditional ceremonies at *songgo* is not performed.

d. Loli Village

In Loli village, nowadays the traditional ceremony for harvesting honey has been disappeared. This condition is due to intensive religion interfere in the area, in this case Christian. To date to harvest honey, the local people just pray to the God before and after harvesting honey, mastered by local Christian clergyman.

3. Harvesting Methods and Distribution of Honey

Recently to harvest bee honey, in addition to the traditional custom, the local people also ask permission to forest station administrator if they will harvest the bee honey in forest area to appreciate the government authority of the forest. Bee honey is harvested by a group of community (4 - 5 persons) to make the work finish quickly. In Fatumonas, Nenas and Loli villages members of the harvesting group must be members of the same family or clan, whereas in Fatumnasi, Nunbena and Lil'ana villages members of the harvesting group are members of same family or clan and members of community who have no kinship with owner of *faniks*. The harvesters in the villages above are either have or have no *faniks*.

In the most of villages, there are no strict regulation that rule whose *faniks* have to be harvested first. However, special case occurred in Nunbena, Lillana and Fatumnasi villages (formerly, before independence, these villages are parts of *Kefettoran*, Nunbena), customarily the *fettor's faniks* is going to be harvested first, but if the *fettor* came late to the harvesting place, his *faniks* will be harvested afterwards in the special time but still in harvesting season. This evidence gives information to us that in the former time when authority of the customary officials were still strong and acknowledged, the *faniks* of the customary officials had to be harvested first.

Harvesting bee honey is done at night (8 or 9 p.m. local time) when dark moon until early morning (8 am) by smoking to expel bee from beehive. To climb the trees they use ladder from wood or bamboo that has many twigs. The ladder is tightened to the trees by rope of rattan or stem of herb. The ladder is used for long time. Honey is taken from honeycomb in the field. Harvesting bee honey usually takes place 1 up to 2 weeks.

Harvester (climber) has to avoid to do *pamali* (something prohibited to do or *taboo*). The *pamali* is rather different from place to place. Some of *pamali* are as follows. In Fatumonas village, the climber is prohibited using clothes which have been washed by soap and smell of perfumery, smell of smoke (tobacco) is also prohibited. in Loli village the *pamali* is prohibited to catch the rope by teeth when bound ladder for harvesting. If violating the *pamalis*, they believe a dangerous thing will strike the climber such as the bees are going to sting violator or the climber will fall down. In order to make the wild bees come back and make beehives more abundant next year, the climber sings a song in local language such as *naktau* (Amfoang language) or *nak uek un* (Mollo language) which substance prayers of adoration to the bees and trees.

The local people have good knowledge to distinguish trees whether could be climbed or not in effort to harvest honey. They have been knowing traditionally, that many kinds of trees have strong branches, such as *ampupu, kayu putih, beringin, kabesak, bonak batu, kapuk hutan, nitas, taupi* and kapok, whereas other trees have not strong branches to be climbed.

Bee honey is traditionally harvested by smoking the nest which destroys the bees and their brood. To avoid more destruction of bees from smoking with flaming of fire, better smoker is needed. The local people are advised better using smoker that is made of mixture dry stalk of coconut and bamboo such as used in Lampung (Widjaja, 1993). It seems no difficulty for the local people to apply new smoker because there is no conflict of interest with the customary tradition and the material (coconut and bamboo) is available in huge amount in the area. The benefits of this smoker are producing only smoke without flaming of fire (Widjaja, 1993) and indirectly reducing occurrence of forest fire because of careless of throwing the smoker after smoking the beehives, even though they are compelled by customary law to avoid forest fire in bee honey harvesting.

Distribution of honey to their family members depends on capability to harvest honey without distinguishing whether elder son or younger son. If the younger son, for instance, could harvest more plenty honey than the other sons, it means his part also more plenty. In Fatumnasi, Nunbena and Lil'ana villages, there is a rule for the harvesters who have no *faniks*. The rule is the harvesters have to fulfil the containers brought by the owner of the *faniks* with honey and parts of beehive which content brood, whereas all of the beeswax are owned by the owner of the *faniks*. The remaining products are divided among the harvesters.

D. Product, Processing and Using

Product of June - July harvesting season is abundant, whereas product of September - October harvesting season is little. The description of the product based on the interviewed farmer is as follows. In Loli village, at the periphery of main road Soe - Kefamenanu there is a big kapok tree with diameter more than 1 meter, from beehives that hang is produced 500 bottles of honey (about 300 liters) on June - July harvesting season whereas on September - October harvesting season merely produce 80 bottles of honey (about 50 liters). This condition is occurred due to difference kinds and amount source of foods. Source of foods for honey in June - July harvesting season mainly come from nectar flowers of *hue* (*Eucalyptus alba*) and *ampupu* (*Eucalyptus urophylla*) which abundantly distribute in the forest nearby, whether forest savanna, open savanna or *Eucalyptus urophylla* forest. The Eucalyptus is flowering on April until June. While source of foods for honey in September - October harvesting season come from nectar flower of *jambu* (*Eugenia sp.*) and *kesambi* (*Schleicera oleosa*) and the others. Most of West Timor area is predominated by savanna (forest savanna, open savanna, and palm savanna), that's why source of food for honey in the study area is mostly same. Honey from June - July harvesting season is sweeter than honey from September - October harvesting season due to purity of nectar flower as source of food that are mostly *Eucalyptus sp.*, while honey from September October harvesting season is rather bitter.

Product of honey in the former days is greater than nowadays due to deforestation. The increasing of population seems to catalyze the condition, moreover, in West Timor the local people have custom of doing extensive agriculture, namely shifting cultivation that makes land more degradable.

To get honey, the honeycombs are squeezed by hand and honey is filtered by grained cloth. The honey is placed in bottle or jerry-can. The method of extracting honey makes the quality of honey is not good because the honey still contains a lot of pollutants. The honey is preferable filtered by a fine grained cloth to reduce coarse pollutants to increase quality of honey, so that the honey can be sold more expensive or can be stored for a long time. From one big beehives can produces 6 – 8 bottles (4 – 5 liters) of honey.

The other products from beehives are brood and beeswax. From 50 beehives (big ones) is produced about 20 - 25 kg of beeswax. To produce beeswax, the local people cook raw beeswax with water in the cooking pod. This hot-mixture is filtered by a stack of coconut's fibre or sugar palm's fibre and pressing it by a pair of wood which already tightened those tips. The wax is castled depend on necessity, if the wax is stored or sold, there is no requirement of the shape. But, if the wax is used as a candle for lamp, the wax is castled to the candle's shape by putting it into bamboo *(bambu pelat* or *bambu mila*) with diameter about 2 until 10 cm.

Product of honey in Fatumonas, Nenas, Fatumnasi and vicinity villages (more isolated areas) is consumed for subsistence, if more than that some of it will be sold. In these villages honey is used for sweeter, consumed in pure form or diluted with water. Whereas in Loli and vicinity villages, honey is sold to the to passenger of common vehicles or domestic tourist because these villages is passed by Soe - Kefamenanu main road. This condition made honey's price more expensive than that in Fatumonas, Nenas or Fatumnasi villages, nearly twice up to 3 times because honey can be sold to passenger of common vehicles or domestic tourist. It means profitable to sell honey.

Price of honey depends on localities and supply of honey. In the producing and rather isolated areas honey is cheaper, in harvesting season as well than that beyond these conditions. In 1994 in Fatumonas honey is sold at 500 - 750 *rupiahs* per bottle in harvesting season and beyond that season is sold at 1000 - 1500 *rupiahs* per bottle. In Loli honey is sold at 1000 - 1500 *rupiahs* and 2500 -3000 *rupiahs* per bottle in harvesting season and beyond that season respectively. In the city (Kupang and Soe) honey is sold at 3000 - 5000 *rupiahs*. Nowadays, the honey price is becoming 3 times than the honey price in 1994. In the producing areas, honey is not adulterated with sugar palm syrup (*gula air*) which is abundant in the study areas when the local people sell honey, while in then city (Kupang and Soe) the honey is usually adulterated to get more profit.

The local people use brood as side dish by eating raw or cooked. The brood is also dried for storing. Wax from beehive is used to substitute oil for lighting. In the former days, they used this wax and candle oil for lighting. Nowadays the candle is still commonly used for lighting in the hut of the *ladang*. Some of wax is sold at 750 - *1000 rupiahs* per kg depends on localities, in rather isolated area the price is cheaper. Recently, the price is becoming 2 up to 3 times than that in 1994. Even though most products are used for subsistence, however, the bee honey harvesting activity still gives important meaning to the local people.

E. Traditional Custom to Conserve and Moving Faniks

To conserve the environment that bees prefer to come and make hives, the local people customarily are prohibited to make *ladangs* in the forest plots where the bees made hives, because the activity will disturb the bees and make the bees moving to other region. However, cutting trees for lumber (usually in small amount) or to gather fuelwood from dead trees or dead branches is allowed . In addition to the action above, after harvesting they have tradition taking a part of *nisin* (part of beehive which attaches to the branch), then placing this material under tree near trunk and covering it with stone. This action is done at every tree which bear beehives after harvesting to make the bees are going to alight again on these trees next year. The actual condition, as interviewed local people stated, every year beehives which hang on the branches of the trees can become less or more abundant.

How to move *fanik* from former *fanik* to another tree or to make the other tree become *fanik*? In Fatumonas (Amfoang district), the procedure is rather different from Loli (Mollo district). In Fatumonas, on the harvesting season if *fanik* is already old or fallen down, they move nisin of this tree or former ladder to another tree which usually bees prefer to make beehives. Next year this new tree will bear beehive (become *fanik*). Whereas in Loli, on the harvesting season, they make mixture of *nisin* from *fanik*, a few bark of the *fanik*, papaya fruit which hang on the tip of the papaya tree (the youngest and the smallest ones), a shrub of *fua koti* (*Breynia cernua*). This mixture is kneaded, and placed under the tree which generally the bees prefer to make beehives, then covered with a few of soil and then trodden by the left foot. In the next year the new tree is going to bear beehive (become *fanik*). The purpose of using *Breynia cernua* is to make the new tree is going to bear beehive in abundant like the flower of *Breynia cernua*. They choose new tree that has good branches at good location (not on steep slope or ravine) to make the tree can be climbed easily.

F. Traditional PRACTISE to Distribute Faniks

There is an interesting matter about *faniks* in South Amfoang district and in North Mollo district. In these districts, there is still exist a customary tradition for giving the *faniks* to other member of community who has no *fanik* at all. Persons who can receive the *fanik* are members of same family or clan and someone who has close relation to that community.

How to ask *fanik* to local community? At first, the asking person has to bring an animal (goat, pig or horse) and to ask the *adat* officials that he wants to have *fanik*. The *adat* officials sacrifice the animal at *songgo* to offer to the ancestors witnessed by the local community. At that event, the *adat* officials ask to the community to give the owner of animal a *fanik*. Member of community usually gives *fanik* to asking person without appointed by the *adat* officials. In case of no one offers to give a *fanik*, the *adat* officials will appoint one member of community to give one of his *fanik*.

In South Amfoang district, one *fanik* is given with land 2 - 3 acres where that *fanik* grows. If another tree around the *fanik* became a *fanik*, this tree are also owned by the asking person. *Fanik* includes land that already has given can be inherited to family member of new owner. If new owner moved out from this region and has no member of family, this *fanik* can be sold with a certain price depend on how much can produces honey.

In North Mollo district, the matter of giving *fanik* is rather different than that in South Amfoang district, even among regions in the North Mollo district itself. In Nenas just one *fanik* is going to be given (with one or two beehives) without the land because the land is owned by the *adat* officials. This *fanik* will be returned to the *adat* officials when the asking person moved out, and the *fanik* is going to be given back when the asking person came again. The ownership finished when the tree has fallen down. While in Nunbena, Lillana and Fatumnasi, the ownership of *faniks* is still in the hand of the giver, whereas product of honey bee is going to the given-person. To appreciate the giver usually a part of honey products is sent to owner of the *faniks*.

Giving *fanik* to other person is more democratic in South Amfoang district than that in North Mollo district. The differences among the regions seem to be influenced by the differences of the customary tradition locally among the regions, even though the customary tradition is mainly same in general.

CONCLUSIONS

The traditional bee honey harvesting in the West Timor, Indonesia is commonly present in the interior regions at forest nearby. The forests that produce bee honey were mainly former customary forests as prohibited forest. The harvesters of bee honey traditionally have participation in conserving the forests by rearing the forest plots where honey bees make beehives.

The bee honey seasons in the study areas are in June - July for great harvest and in September - October for small harvest. Source of the food mainly comes from *Eucalyptus sp.*, *Eugenia sp.* and *Schleicera oleosa* which abundantly distribute there. The bee prefers the specific trees for hiving such as *bonak* (*Tetrameles nudiflora*), *kabesak* (*Acacia leucophloea*), *neke* (*Gossampinus malabarica*), kapok tree (*Ceiba pentandra*), *nitas* (*Sterculia foetida*), *beringin* (*Ficus benyamina*) and the other trees.

There is still practised the customary tradition on harvesting, conserving and distributing of bee honey in the study areas, although practising of the customary tradition is rather different from place to place. Harvesting bee honey in the study areas is still a relatively important source of income of the local people for fulfilling their necessities in the subsistence level.

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