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Inventory and conservation plant of *oke sou* traditional ceremony; A welcoming tradition of maturity girl on the community of Lako Akediri Village, West Halmahera, Indonesia

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Abstract. *Wakhidah AZ, Silalahi M, Pradana DH. 2017. Inventory and conservation plant of oke sou traditional ceremony; A welcoming tradition of maturity girl on the community of Lako Akediri Village, West Halmahera, Indonesia. Biodiversitas 18: 65-72.* Welcoming ceremony maturity girl (*oke sou*) is a hereditary tradition from Lako Akediri Village which believed effective in maintaining health and beauty of girl. *Oke sou* ceremony held when the girl gets her first menstruation. This preliminary research aims to document plant species used in *oke sou* ceremonies and to explain conservation behavior of community at Lako Akediri Village towards the used plant. The investigation was conducted twice, first on May-June 2014 resumed on October 2014. Ethnobotanical data were collected using semi-structured interviews method to a village shaman, traditional elders, and local women (30 respondents). Plant specimens collected from its habitat, made herbarium, and then identified. Recorded as many as 88 plant species from 78 genera belonging to 46 families used by community at Lako Akediri Village in *oke sou* ceremony. Rice (*Oryza sativa* L.) is the most mentioned plant by the local community (20 respondents). The most widely used families are Fabaceae and Lamiaceae, each family has 7 species. The highest source of plant in *oke sou* ceremony derived from cultivated which in total 37 species (42%). This number represents used plants in *oke sou* ceremony have been widely cultivated by Lako Akediri community. The results of this study will enrich database of local knowledge in Indonesia and become source of research object in developing natural ingredients for human welfare.

Keywords: Conservation, ethnobotany, Lako Akediri Village, *oke sou* ceremony, West Halmahera

INTRODUCTION

Plants utilization by humans had been started since beginning of civilization. It is evidenced by the presence of some relief at Borobudur temple in Central Java that depicting human interaction with plants, such as using plants as offering relief, food, and shelter. Walujo (2000) said humans are very dependent on plant to maintain their viability. Plants utilization by humans include as foodstuffs, medicine, building materials, household utensils, clothing materials, and traditional ceremonies complement (Setiawan and Qiptiyah 2014).

Plants utilization as traditional ceremonies complement still continues today. For example, on implementation of several traditional ceremonies in East Java. In Kasada ceremony that held by community Tengger village, used as many as 16 plant species, including *Anaphalis longifolia*, *Oryza sativa*, and *Cosmos caudatus* (Pramita et al. 2013). In *Sura* month welcoming ceremony by community on District Nganjuk, used as many as 62 species of plants, such as *Manihot esculenta*, *Cananga odorata*, and *Agathis dammara* (Ayunintyas and Hakim 2014). Several ceremonies in other regions also use a variety of plants, they are Sekaten ceremony in Central Java (16 species) (Widiyastuti et al. 1998) and traditional rituals by Tajio tribe in Central Sulawesi (41 species) (Rahyuni et al. 2013).

In West Halmahera, especially at Lako Akediri Village, there is a traditional ceremony that use numerous variety of plants in its implementation, the ceremony name is *oke sou*. *Oke sou* ceremony is tradition of welcoming maturity girl in West Halmahera held when a girl gets her first menstruation. This ceremony is led by a woman shaman with implementation duration varies between 3, 7 to 9 days depending on length of menstruation period and decision of the girl's family.

The plant utilization as traditional ceremonies complement will generate management culture of plant resources in sustainable manner. As said Utama and Kohdrata (2011), local culture certainly shows dependence on nature that led to respect attitude toward nature. It happens because the local communities believe that traditional rituals can run smoothly when needed plants complete. Therefore, the local communities will maintain an existence of used plant in certain rituals. It proves traditional ceremony is wealth of culture that bear positive impact on plant conservation-local wisdom (Setiawan and Qiptiyah 2014). Based on that view, it is important to study and document plants utilization in *oke sou* ceremony. Beside it, the data can be added to ethnobotany database of local communities knowledge in Indonesia.

There are two objectives in this study. First, to inventory and to describe used plant species in *oke sou*

ceremony at community Lako Akediri Village in West Halmahera. Second, to explain about conservation behavior of community toward used plants in *oke sou* ceremony.

MATERIALS AND METHODS

Study area

The study was conducted at Lako Akediri Village, Sub-District of Sahu, District of West Halmahera, North Maluku (North Moluccas), Indonesia (Figure. 1), on May-June 2014 and October 2014. Geographically Lako Akediri Village lies on coastal area E 27°22'17.323" – E 127°37'5.214" and N 0°58'13.505"–N 1° 8'5.332". Total area of Lako Akediri Village is 10 hectares, which located at an altitude 31 meters above sea level with average rainfall 15 mm/month. The population in 2014 was 344 inhabitants; 175 males and 169 females, with number of households were 85. As many as 98% community at Lako Akediri Village come from Sahu tribe, while the rest are ethnic immigrants, such as Buton, Bugis, and Sasak (Dirjen Bina Pemdes 2011).

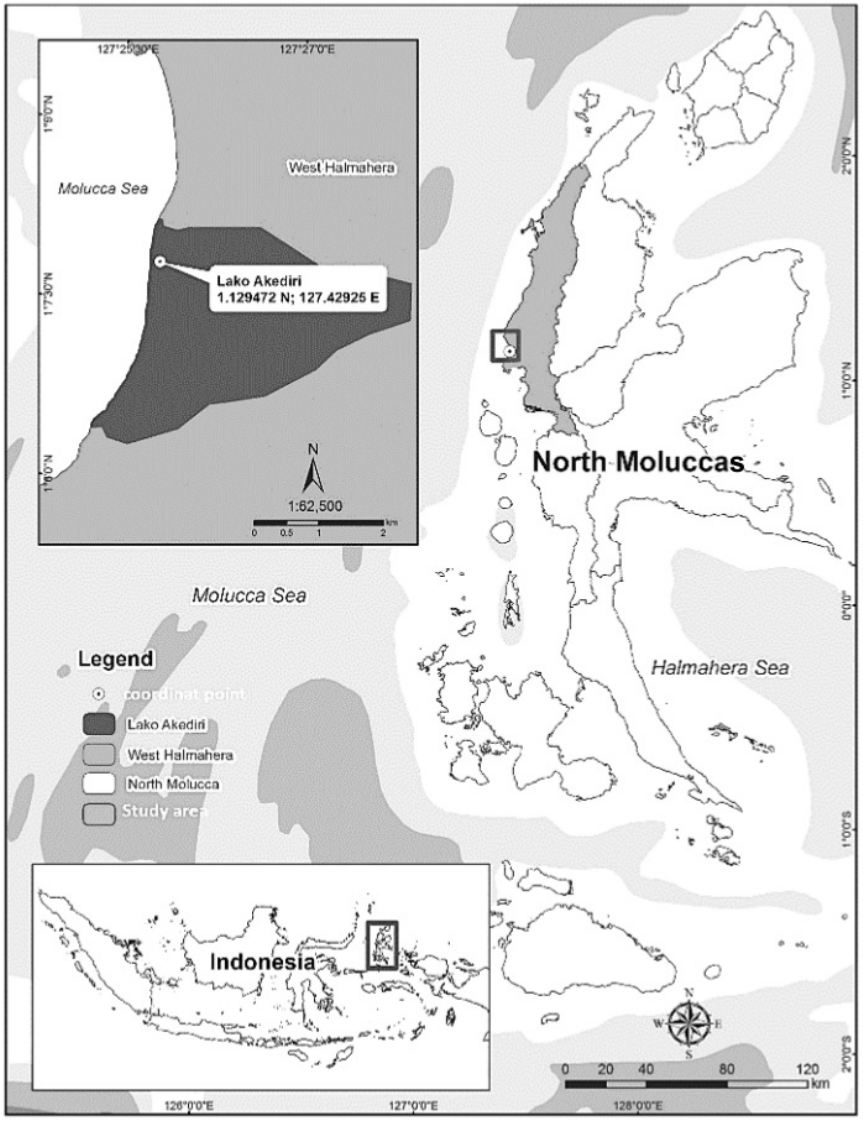

Figure 1. Study site at Lako Akediri Village Sub District Sahu, District of West Halmahera, North Maluku, Indonesia

Interview and data collection

Ethnobotanical data were collected by semi-structured interviews method. Interviews were conducted individually with key respondents and general respondents. Key respondents are people who considered having more knowledge about village's history, tradition, and *oke sou* ceremony, they are a woman shaman and village elders. General respondent is local woman who ever performed *oke sou* ceremony, with age range of 12-60 years totaling 30 people. Meanwhile, specimen sample of used plants in *oke sou* ceremony were collected directly from the habitat with key respondent. Specimen samples were made herbarium, then identified by first author and expert in Laboratory of Plant Taxonomy, Department of Biology, Universitas Indonesia, Depok, West Java, Indonesia.

Data analysis

Data were analyzed using qualitative and quantitative approaches. Qualitative analysis aimed to determine content of secondary metabolites in some used plants in *oke sou* ceremony. Quantitative analysis was conducted to obtain the most widely used plants species and families, also conservation behavior of community at Lako Akediri Village toward used plants in *oke sou* ceremony.

RESULTS AND DISCUSSION

Originally Lako Akediri Village was called "Lako Ichi", which means estuary. After the Second World War, the village name was changed to "Lako Akediri" that means estuary of Akediri river. Administration of Lako Akediri Village was officially established in 2004. The majority of community at Lako Akediri Village come from tribe Sahu, but the implemented tradition is from Ternate. Existence of Ternate tradition was influenced by Sultan Ternate who commissioned the head of customs (*vanira*) as sultan representative on every village in West Halmahera.

***Oke sou* ceremony**

In addition to customary traditions, *oke sou* ceremony is held hereditary because believed efficacious for maintaining the health and beauty of girl. The health benefits contained as relieving menstrual pain, expediting menstrual blood, and increasing fertility. While the beauty benefits are to deodorize body odor, to soften and brighten the skin.

There are 7 stages on *oke sou* ceremony,start from *kasih naik*, *minum obat*, *bafufu*, *kasih turun*, *jokokaha*, *saro-saro*, and *baca doa*. Each stage uses variying amount plants (Figure 2). *Minum obat* is stage at *oke sou* ceremony that uses the most of plants (66 species). While stages *joko kaha* is the least in using plants (3 species).

Used plant in *oke sou* ceremony

This research showed as many as 88 plant species from 78 genera belonging to 46 families used by community of Lako Akediri in *oke sou* ceremony (Table 1). The most five cited plant species are *Oryza sativa* L. (20 respondents), *Pogostemon cablin* (Blanco) Benth. (13 respondents), *Lansium parasiticum* (Osbeck) K.C.Sahni & Bennet (11 respondents), *Cananga odorata* (Lam.) Hook.F. & Thomson (10 respondents), and *Cyperus squarrosus* L. (10 respondents). Fabaceae and Lamiaceae are the most widely used plants families, which total species on each family is 7 species. Following by Acanthaceae (6 species), Euphorbiaceae (4 species), then Moraceaea, Myrtaceae, and Piperaceae with same amount in total species (3 species) (Figure 3). The rest plant families are only used as much as 1-2 plant species.

Resource of used plant

Based on interviews with general respondents, reported source of used plants in *oke sou* ceremony divided into three, cultivated, ruderal and wild (Figure 4). The highest source of used plant derived from cultivated as many as 37 species (42%), while the lowest source derived from wild plants are 23 species (26%).

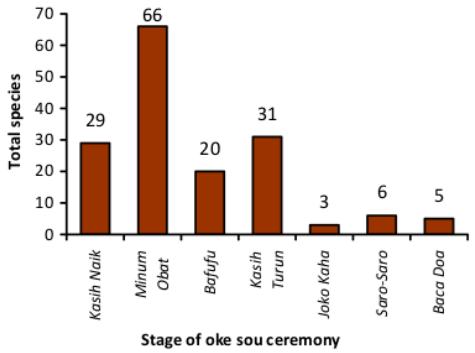

Figure 2. Comparison the number of used plants on each stage in *oke sou* ceremony at Lako Akediri Village, West Halmahera, North Maluku, Indonesia

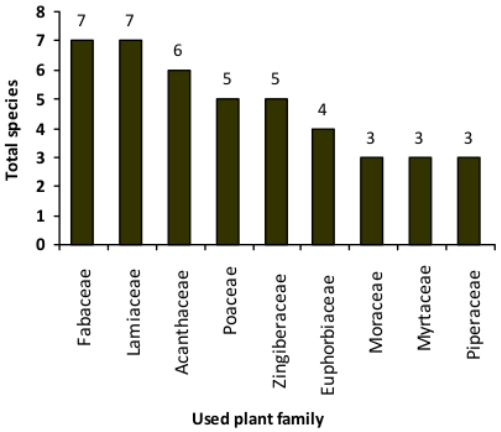

Figure 3. Comparison the most widely used plant family in *oke sou* ceremony at Lako Akediri Village, District of West Halmahera, North Maluku, Indonesia

Table 1. Diversity and resources of used plants in *oke sou* ceremony that held by community at Lako Akediri Village, West Halmahera, North Maluku, Indonesia

Plant families and species	Vernacular name	Source
Acanthaceae		
Graptophyllum pictum (L.)	*Kabi-Kabi Merah*	Cultivated
Graptophyllum pictum 'Roseum variegatum'	*Kabi-Kabi Putih*	Cultivated
Hemigraphis alternate (Burm.f.) T. Anderson	*Lire Buntal (♀)*	Cultivated
Hemigraphis rependa (L.) Hall F.	*Lire Panjang (♂)*	Cultivated
Justicia gendarussa Burm.f.	*Gandarusa*	Wild
Ruellia simplex C. Wright.	*Puli*	Cultivated
Anacardiaceae		
Mangifera sp.	*Mangga Dodol*	Ruderal
Annonaceae		
*Annona muricata*L.	*Nangka Belanda*	Cultivated
Cananga odorata (Lam.) Hook.f. & Thomson	*Kenanga*	Ruderal
Apiaceae		
Coriandrum sativum L.	*Surai*	Cultivated
Apocynaceae		
Alstonia scholaris R. Br.	*Hange*	Cultivated
Araceae		
Alocasia macrorrhizos (L.) G.Don	*Kia*	Ruderal
Araliaceae		
Nothopanax scutellarium Merr.	*Daun Mangkok*	Cultivated
Arecaceae		
Areca catechu L.	*Pinang*	Ruderal
Cocos nucifera L.	*Kelapa*	Ruderal
Asteraceae		
Blumea balsamifera (L.) DC.	*Madikapu*	Ruderal
Wollastonia biflora (L.) DC.	*Cinga-Cinga*	Ruderal
Balsaminaceae		
Impatiens balsamina L.	*Laka*	Cultivated
Bombacaceae		
Durio zibethinus L.	*Durian*	Ruderal
Burseraceae		
Canarium amboinense Hoch.	*Kenari*	Ruderal
Caricaceae		
*Carica papaya*L.	*Pepaya*	Cultivated
Clusiaceae		
Garcinia mangostana L.	*Manggis*	Wild
Combretaceae		
Terminalia catappa L.	*Ngusu*	Wild
Commelinaceae		
Tradescantia spathacea Sw.	*Bia-bia*	Cultivated
Convolvulaceae		
Merremia peltata (L.) Merr.	*Koge*	Wild
Cyperaceae		
Cyperus squarrosus L.	*Teki*	Ruderal
Scleria sp.	*Cakagole*	Ruderal
Euphorbiaceae		
Homalanthus novoguineensis (Warb.) K.Schum	*Gidilule*	Wild
Jatropha curcas L.	*Balacai Putih*	Cultivated
Macaranga tanarius (L.)	*Same*	Wild
Mallotus apelta (Lor.) Müll.Arg.	*Lufiti*	Wild
Fabaceae		
Albizzia saponaria (Lou.) Miq	*Fau-Fau*	Ruderal
Cynometra cauliflora L.	*Mano Mano*	Ruderal
Desmodium gangeticum (L.) DC.	*Rai-Rai*	Ruderal
Pongamia pinnata (L.) Pierre	*Hatehira*	Wild
Pterocarpus indicus Wild.	*Ligua*	Wild
Sesbania grandiflora Pers.	*Turi*	Cultivated
Tamarindus indica L.	*Asam Jawa*	Ruderal
Lamiaceae		
Callicarpa rubella Lindl.	*Ngaai Madudera*	Ruderal
Coleus scutellariodes Bth.	*Mayana*	Cultivated
Leucas zeylanica (L.) R.Br.	*Gofu Hairani*	Ruderal
Orthosiphon grandifloras Bold.	*Kumis Kucing*	Cultivated
Pogostemon cablin (Blanco) Benth.	*Goro-goro/ Nilam*	Cultivated
Premna serratifolia L.	*Gumira*	Wild

Vitex pinnata L.	*Gofasa*	Wild
Lauraceae		
Cassytha cf. *filiformis*	*Tali Kuning*	Ruderal
Liliaceae		
Allium sativum L.	*Bawang Putih*	Cultivated
Lygodiaceae		
Lygodium sp.	*Gumoho*	Wild
Magnoliaceae		
Michelia champaca L.	*Cempaka*	Ruderal
Malvaceae		
Kleinhovia hospital L.	*Liwui*	Wild
Melastomataceae		
Lansium parasiticum (Osbeck K.C.Sahni & Bennet.	*Langsa*	Ruderal
Xylocarpus moluccensis (Lam.) M.Rocm	*Lolesou*	Wild
Moraceae		
Artocarpus cf. *ribes*	*Senang*	Wild
Ficus fistulosa Reinw. ex Blume	*Coro*	Ruderal
Ficus hispida L.	*Tagalolo*	Ruderal
Myristicaceae		
Myristica fragrans Houtt	*Pala*	Ruderal
Myrtaceae		
Psidium guajava L.	*Giawas*	Cultivated
Syzygium aqueum (Burm.f.) Alston	*Gora*	Cultivated
Syzygium aromaticum (L.) Merr. & L.M.Perry	*Cengkeh*	Ruderal
Oleaceae		
Jasminum sambac (L.) Aiton	*Manurung*	Cultivated
Jasminum officinale L.	*Gambe*	Cultivated
Oxalidaceae		
Averrhoa bilimbi L.	*Belimbing Wuluh*	Ruderal
Pandanaceae		
Pandanus amaryllifolius Roxb.	*Pondak*	Cultivated
Phyllanthaceae		
Breynia cernua (Poir.) Müll.Arg.	*Gagilamo*	Wild
Phyllanthus sp.	*Balakama Biji*	Ruderal
Piperaceae		
Piper betle L.	*Sirih*	Cultivated
Piper nigrum L.	*Rica Jawa*	Cultivated
Piper sarmentosum Roxb.	*Tofure*	Ruderal
Poaceae		
Bambusa bambos (L.) Voss	*Bulu*	Wild
Cymbopogon citratus (DC.) Stapf	*Gramakusu*	Cultivated
Eleusine indica (L.) Gaertn.	*Partago*	Ruderal
*Oryza sativa*L.	*Padi*	Cultivated
Oryza sativa var. *glutinosa*	*Pulo Putih/Hitam*	Cultivated
Punicaceae		
Punica granatum L.	*Delima*	Cultivated
Ranunculaceae		
Nigella sativa Linn.	*Jinta Hitam*	Cultivated
Rhamnaceae		
Alphitonia moluccana Teijsm. & Binn. Ex Brais	*Raurika*	Wild
Rosaceae		
Rosa hybrida E.H.L. Krause	*Bunga Rosi*	Cultivated
Rubiaceae		
Morinda citrifolia L.	*Kome*	Wild
Rutaceae		
Citrus hystrix DC.	*Lemon swanggi*	Cultivated
Melicope latifolia (DC.) T.G. Hartley	*Sawuyo*	Wild
Selaginellaceae		
Selaginella sp.	*Rutu-Rutu*	Wild
Solanaceae		
Physallis peruviana L.	*Dagameme*	Wild
Sonneratiaceae		
Sonneratia alba Sm.	*Posi-posi/Soki bulat*	Ruderal
Zingiberaceae		
Boesenbergia rotunda (L.) Mansf	*Tumbukunci*	Cultivated
Curcuma longa L.	*Kuning*	Cultivated
Curcuma zanthorrhiza Roxb.	*Tumbulawak*	Cultivated
Kaempferia galangal L.	*Bataka*	Cultivated
Zingiber officinale Roscoe.	*Guraka*	Cultivated

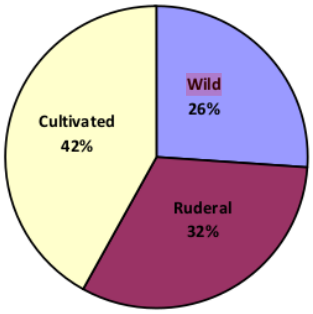

Figure 4. Comparison the percentage of used plants source in *oke sou* ceremony at Lako Akediri Village, District of West Halmahera, North Maluku, Indonesia

Discussion

Efficacy oke sou ceremony

Based on scientific point of view, it has been proven efficacious to maintain the health and beauty in *oke sou* ceremony obtained from diversity of used plant. In example the use of *Zingiber officinale* Roscoe, *Allium sativum* L. and *Vitex pinnata* L. on stages *minum obat*, those plant relieve menstrual pain (Rajith et al. 2012; Marliana et al. 2011). According to research Marliana et al. (2011), the bark of *Vitex pinnata* L. contains flavonoids (secondary metabolites) that effective to relieve pain. Flavonoids which are phenolic compounds, can deactivate activity of enzyme cyclooxygenase that cause pain (Handayani R, pers. comm. 2015).

Furthermore, used plants in *oke sou* ceremony which also effective in expediting menstrual blood are *Coleus scutellarioides* Bth. and *Graptophyllum pictum* (L.) Griff. (Dalimartha 2008). Those plants are used on stages *minum obat* and *bafufu*. *Coleus scutellarioides* Bth. contain tannins, phytosterols, and calcium oxalate which have pharmacological effect as laxative menstruation blood and eliminating blood clots (Wijayakusuma 2008). *Graptophyllum pictum* (L.) Griff. contains secondary metabolites that also effective in expediting menstrual blood, for instance glycosides, steroid, saponins, tannins, and alkaloids (Dalimartha 2008).

The efficacy in increasing fertility obtained from secondary metabolites content of fruit and flower *Punica granatum* L. that used at stages *minum obat* and *bafufu*. *Punica granatum* L. can increase girl fertility with maintaining health of reproductive organs (Miguel et al. 2010). Antioxidants and anti-microbial in this plant, such as tannins, effective to overcome inflammation of uterus and vaginal discharge (Nauli 2010). Furthermore, secondary metabolites in *Punica granatum* L. such as gallic acid, a ellagy acid, flavonol, are efficacious to smooth the skin by preventing skin from dryness and skin aging (Cho et al. 2010).

Utilization the bark of *Lansium parasiticum* K.C. Sahni & Bennet on the stages *kasih naik* and *kasih turun*, is efficacious to smooth and to bright the skin. According Tilaar et al. (2008), *Lansium parasiticum* K.C. Sahni & Bennet contains hidroetanol extracts that good to moisturize and to slow down skin pigmentation. While the efficacy scenting the body obtained from *Syzygium aromaticum* (L.) Merr. & L.M. Perry and *Myristica fragrans* Houtt. Both of plants are used on stages *minum obat* and *bafufu*. *Syzygium aromaticum* (L.) Merr. & L.M. Perry contains essential oils such as eugenol, which effacious to warm the body (Kardinan 2005). Myristicin, an essential oil content in*Myristica fragrans* Houtt.useful to scent the body (Kardinan 2005).

Diversity of plants used in oke sou ceremony

Starting from 88 plant species used, *Oryza sativa* L. is the most cited plant species by community Lako Akediri (20 respondents). It is understandable because utilization of *Oryza sativa* L. was found on 4 stages *oke sou* ceremony, those are *kasih naik*, *kasih turun*, *jokokaha*, and *saro-saro*. That plant becomes the most cited plant because community of Lako Akediri using it frequently. *Oryza sativa* L. is used as basic material for skin herb on *kasih naik*, mixture material for the hair herb on *kasih turun*), and also as ritual complement on *jokokaha*, as groceries on *saro-saro* stages.

Scientifically proven that *Oryza sativa* L. has benefits for skin care and hair health. Based on Handayani R, pers. comm. (2015), seed of *Oryza sativa* L. contains fatty acids, licorice, vitamin B3, and B6 which are beneficial to brighten skin and to provide a cooling effect. Furthermore, part of *Oryza sativa* L. seed that fat soluble is efficacious to soften and to moisturize the skin (Tilaar 1999). This fat content is good for maintaining healthy skin and hair. Utilization of *Oryza sativa* L. as ritual complement material on *jokokaha* stages is a hereditary culture preserved by the community Lako Akediri.

Fabaceae and Lamiaceae are the most widely used plants family in *oke sou* ceremony, which total species on each family is 7 species. Family Fabaceae is also the most cited plant to treat disorders of female reproduction on Karnata region, India (Vidyasagar and Prashantkumar 2007). *Tamarindus indica* L. is one of Fabaceae species used on stages *minum obat* and *bafufu*. This plant is efficacious to expedite menstruation blood and to overcome vaginal discharge (Sa'roni and Nugroho 2012).

Utilization plants species from family Lamiaceae was found on stages *kasih naik*, *minum obat*, *bafufu*, and *kasih turun*. *Pogostemon cablin* (Blanco) Benth was the most cited plant species from Lamiaceae, as many as 13 respondents on community at Lako Akediri. At *oke sou* ceremony, *Pogostemon cablin* (Blanco) Benth. used as mixture material for skin herb and hair herb. In both these herbs, *Pogostemon cablin* (Blanco) Benth. Has function as fragrances. Sahoo et al. (2001) said fragrance leaves of *Pogostemon cablin* (Blanco) Benth. derived from patchouli oil that is important element in perfume production.

Some plant families in *oke sou* ceremony is only lesss used, such as Bombacaceae (*Durio zibethinus* L.), Burseraceae (*Canarium amboinense* Hoch.), Clusiaceae (*Garcinia mangostana* L.), and Commelinaceae (*Tradescantia spathacea* Sw.). That case is estimated

because not many community at Lako Akediriwho know plants from the families. It can happen because of the plant's habitat or place to grow is far from settlement areas. As revealed by Guimbo et al. (2011), the distance of place to grow from settlement is one of reasons the community not knowing and not using a plant.

Conservation behavior of community

Conservation behavior of the community at Lako Akediri can be observed from useful plants quantity that have been cultivated by them. A community who have been dependent on nature, would has awareness to preserve nature intended to survive by itself (Waluyo 2000; Utama and Kohdrata 2011). The quantity of used plants in *oke sou* ceremony that have been cultivated (37 species) shows community at Lako Akediri still try to preserve the used plants in order to maintain *oke sou* ceremony as hereditary tradition. Cultivation of plants is implemented at house yard or unirrigated field which its distance approximately 500 m from the village. Generally, cultivated plants is used more frequently than ruderal or wild plants. Besides used in *oke sou* ceremony, cultivated plants also have another utility. For example, *Citrus hystrix* DC. apart from being used on three stages *oke sou* ceremony (*kasih naik*, *kasih turun*, *baca doa*), it is used as medicine and spice in cooking. Plants derived from the cultivation in example are *Impatiens balsamina* L, *Jatropha curcas* L, and *Psidium guajava* L.

Ruderal plant is plant that lives on disturbed natural habitat, such as along road sides or former field land (Pahan 2006). As many as 32% of plant species in *oke sou* ceremony were obtained from ruderal (28 species). Most species are found on former land of unirrigated field and the roadside at Lako Akediri Village. Field in Lako Akediri Village is not planted by monthly plants, but annual plants. The community Lako Akediri prefers annual plants because can be harvested many times by a single planting. Consequently, a lot of vacant field where can be overgrown by wild plants which some isused in *oke sou* ceremony. There are example of ruderal plants, *Pluchea indica* (L.) Less, *Canarium Amboinense* Hoch, and *Ipomoea pes-caprae* (L.) R. Br.

The next plant resource is from wild habitat. Recorded as many as 26% of used plant species which derived from wild habitat (23 species). Most wild plants have habitus tree which grow in forest near the village. If required, the community at Lako Akediri would go into the forest in order to get used plants. For example at implemented *oke sou* ceremony which is used various bark of many plants that live in the forest. Plants derived from wild habitat in example are, *Merremia peltata* (L.) Merr, *Pongamia pinnata* (L.) Pierre, and *Alphitonia moluccana* Teijsm. & Binn. ex Brais. The community of Lako Akediri do not cultivate the wild used plants probably because the resources in forest is more than enough to fulfil their daily needs. In addition, frequency utilization of wild plants is not as often as cultivated plant. As stated by Tabuti (2012), desire to do plant cultivation is directly proportional to the frequency of use. As higher the plant utilization it will influence in making higher the desire to plant cultivation.

In conclusion, recorded as many as 88 plant species belonging to 46 families are used in *oke sou* ceremony at Lako Akediri Village, District of West Halmahera. There are two the most widely used families, Fabaceae and Lamiaceae. *Oryza sativa* L. is the most mentioned species. Totaling as 37 used plant species (42%) in *oke sou* ceremony have been cultivated by the community at Lako Akediri Village.

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