



Tugu Yogyakarta

ISSN: 2476-9533



Proceeding of the International Seminar on Science Education Volume III



PROCEEDING

International Seminar on Science Education
Volume III



Enhancing Interdisciplinary Practice of Science
Education in the Realization of NGSS
(Next Generation Science Standard)



Graduate School
Yogyakarta State University

Batik Yogyakarta Motif Semen Sido Mukti



October 28th, 2017



Campus Yard Management and Utilization as a Learning Facility and Source in Universitas Kristen Indonesia

Hotmaulina Sihotang¹, Erni Murniarti¹, Marina Silalahi²

¹Departement of Management Education Graduate Program, Universitas Kristen Indonesia, Cawang, Jakarta, 13510, Indonesia, hotmaulina.sihotang@uki.ac.id

²Departement of Biology Education, Faculty of Education and Teacher Training, Universitas Kristen Indonesia, Cawang, Jakarta, 13510, Indonesia

Abstract. This study aims to determine the management and utilization of UKI yard conducted in July to August 2017. The methods in this research used survey, semi-structured as well as in-depth interview. The survey was conducted by observing the entire yard of UKI. The interview sessions involved the users and the managers of UKI yard concerning the management, funding, and the utilization. All the data obtained were analyzed by using descriptive statistics. UKI yard has an area of belonging to UKI foundation. The UKI yard is comprehensively managed by UKI Foundation, Rectorate, Faculties, and Study Programs and used as parking lot, sport area, discussion zone, practicum, plantation field, such as ornamental plants/fruit/shady trees, and also as biodiversity conservation. To optimize the utilization of UKI yard it is managed in accordance with the duties and functions of the parts contained in the UKI foundation. For example, the parking area is managed by the UKI Foundation; the supply and the maintenance for supporting facilities and for learning resources are managed by the Vice Rector on Finance, Human Resources and Public Administration Affairs; Practicum area is managed by the Study Program Board; and the sport area is managed by Vice Rector on Student Affairs. Sports facilities are utilized as the students' nonacademic, talent, and softskillbuilding. *Pulai (alstoniasolaris)*, *melinjo (gnetumgnemon)*, *beringin (ficusbenjamina)*, *ketapang (terminaliacatappa)* and *cashew (anacardiacoccidentale)* are native Indonesian plants found in UKI yard. For the purpose of practicum part of the yard, Biological Garden is made on which various types of plants for conservation, practicum materials and learning resources are employed. Finally, the yard management and utilization were comprehensively conducted an attempt to realize UKI as green campus.

Keywords: Campus Yard, Learning Facilities and Resources, Management

1. Introduction

The quality development of higher education requires, two of them, the entire understanding how the students learn as well as how the teaching material is received. A message perception during the teaching and learning process functions as a primary determinant to the learners' information storage quality. Innovative instruction atmosphere and teaching process appropriateness tend to produce creative graduates and innovative individuals whose unique potentials are needed to develop.

Teaching source is any types of teaching facility and media, a functionally important teaching component. It is reasonably acceptable to say a lecturer in higher education is required to utilize teaching source and media as they hold effective contributions on the teaching context by which participatory learning and concrete learning activities are thoroughly experienced by entire students; consequently the horizon enlargement attempting to achieve instructin objectives are effiently and effectively met.

A university is a formal institution in which education development and leaners' knowlege are substantially enlarged. A campus phisically consists of classroom, laboratory, lecturer room, library, sport facilities, and yard. The campus yard is area used for various purposes including to plant various types of plants, learning facilities, etc. (Silalahi et al, 2016a). The plants growing in the yard holds the roles as *ex-situ* conservation (Toni 2010), bioindicator (Putri 2015) and noise density and pollution reducer. Silalahi (2015, 2016b) reported that they are usually ornamental plants, fruit-producing plants, and shade plants.





Conservating the plants growing in the yard is understood as an *ex-situ* conservation act. Toni (2010) reported that the city forest developed within Universitas Kristen Indonesia (*henceforth* UKI) is aimed at learning and conservating. To introduce the plants diversity, UKI's city forest is divided into three zones according to the Indonesian plant phyto-graphography: (1) zone for plants originating from western Indonesia like *meranti* (*shorea sp.*), (2) zone for plants originating from central Indonesia such as ebony, and (3) zone for those from eastern Indonesia such as *matoa*.

Conservating the plants growing in the yard realizes the possibility of students' positive attitude toward plant and environment. Observing native plants of Indonesia, like *pulai* (*Alstoniascholaris*), *melinjo* (*Gnetumgnemon*), *banyan* (*Ficusbenjamina*), *ketapang* (*Terminaliacatappa*) and cashew (*Anacardium occidentale*) with stem diameter > 50 cm suggested that the selection of plants in UKI yard was initially preassumed to preserve a variety of native plants (Silalahi, 2015). Additionally, the four plants have relatively large number of flowers and frequency; consequently feeding various insects, birds and small mammals are brought into a possible action.

Empirically it is seen in recent times, without considering the conservation value and spirit, there is a tendency to replace the plants in UKI yard with other plants, such as *trembesi* (*Albiniziasaman*), *acacia* (*Acaciamacrophylla*), *guava* (*Psidiumguajava*), *starfruit* (*Averhoa carambola*). The loss of native Indonesian plants in the campus yard implies the loss of learning facilities of Indonesian plants and the miselection of plants growing possibly has implications for the existence and sustainability of plant diversity. Furthermore, the aesthetic value and frequency of flowering and fruiting of conserved plants have to be taken into account.

Until recently the function of the campus yard as a media and learning resource is not utilized as it is assumed that the modern facilities and learning resources are better than the natural facilities available in the campus environment. As a result the plants growing in the campus yard have scientifically and traditionally unidentified. It is thought that indentifying the plants scientific terminology is unimportant, meaningless, and unapplicable to support the teaching process. Ideally, the indetification of plants in the campus yard is positively effective to increase the students' awareness and knowledge toward the living plant species.

Jakarta, the capital city of Indonesia, has the largest number of population and campus compared to other Indonesian cities. The campuses established before Permenristekdikti Nomor 44 Tahun 2015 (Ministerial Decree of Ministry of Research, Technology and Higher Education) about National Standard issued have a limited campus yard area which means that a few plants and limited sports activities realized. Urban society including students does not know the various plant species though they consume some fruit everyday. For example many students recognize soursop (*Annonamuricata*), pineapple (*Ananas camosus*), longan (*Nepheliumlonganum*), avocado (*Preseaamericana*), durian (*Duriozibethinus*), but they do not understand the specific characteristics of the plants. This is to infer their perception and learning awareness toward Indonesian native plants are totally camptured and possibly decreases.

Manajemen is activity that set organization or institution that is man and non man, so the purpose of organization or institution can be achieved effectively and efficienly (Sulistyorini, 2009). It means management is the process of organizing human and non-human in order to effectively and efficiently achieve the institution obejectives. Management is also defined as a process of organizing various resources by cooperating with others through a certain process to achieve organizational goals effectively and efficiently. Fattah as cited in Barnawi and Arifin (2012) said management is often defined as science, tips and professions. Management is meant as the process of planning, organizing, leading and controlling the whole efforts of a certain institution to effectively and efficiently achieve its goal (Suharno, 2008). Thus, campus yard management is obviously inferred to acooperative process in effectively and efficiently utilizing the entire educational facilities and infrastructure in the campus yard.

The teaching paradigm movement from teacher-centered to student-centered believed positions the leaners involvement -an act to acquire the cognitive, affective and psychomotoric aspects- in positively active manner. The students, through the application of student-centered approach, are





directed to have equal reinforcement and facility attempting to independently construct his or her own deep understanding.

Environment according to student-centered learning plays a functional role as a learning media and source. Biodiversity dealing with the plant classification and taxonomy is one of the topics learned in Biology and the use of instructional media in teaching it avoids its difficult concept and structure to the learners since the real experience is definitely constructed.

The sixth standard form of Accreditation of Higher Education Institution (*Akreditasi Institusi Perguruan Tinggi*) suggests the quality is determined by facilities and infrastructures and strengthens some indicators, namely (a) management system, (b) ownership and use of campus area, (c) adequacy and quality, (d) facilities development plan, (e) the provision of centralized learning source and its accessibility to enormously support academic interaction among students, lecturers, experts, and other practitioners.

Obviously there are many simply used and easily practical designed media accessible to the teachers, but creativity, innovation and initiative have to be brought into a reality. In Biology learning, environment is contextually utilized in teaching a range number of materials, for example the types of plants growing in the school yard are alternatively used to the biodiversity teaching. Hence, the account for media existing in the school yard positates in a primary influential consideration promoting its well-organized use in learning.

UKI located in Jakarta has a range number of plants growing in the campus yard physically different (trees, shrubs, and herbs) and functionally altered (shelter, ornamental plants, fruit producers, guardrail). To date the studies on the management and utilization campus yard are far between. Such account leads to the scientific study objectives of the management and utilization of campus yard as learning facility and source in UKI.

2. Methods

2.1. Data Collection

The study was conducted at UKI campus, located at Jalan Diponegoro No 80 (Campus 2) and Jalan Mayjend Sutoyo Nomor 2 (Campus 1) in East Jakarta, started in April 2015 to July 2015 and June 2017 to August 2017. Instruments were developed to determine the management and utilization of campus yard. Digital camera, recording the types of plants and intensive interview, understanding the utilization of campus yard are two instruments of data collection. The purpose sampling method to select the respondents, namely Vice Rector for Academic Affairs, Vice Rector for Student Affairs, the head of Biology Education Study Program and some lecturers utilizing campus yard as learning source was conducted. The management of campus facilities was taken from Accreditation of Higher Education Institution 2016 document of UKI. Thoroughly observing the Campus 1 yard was employed to inventory the plants growing in UKI yard, to identify its local terminology (Indonesian language), and to classify its quantity. Finally, the head of Biology Education Study Program interview gave deeply understanding on the arrangement system of campus yard and its division.

2.2. Data Analysis

Data was analyzed quantitatively and qualitatively. The analysis of utilization management of campus yard as learning facility and source was analyzed with descriptive statistics.

3. Results

3.1. The Description of UKI Yard

Universitas Kristen Indonesia (UKI) is one of the private universities located in Jakarta. UKI has two campuses, namely (1) at Jalan Diponegoro No 80, Central Jakarta, hereinafter called Campus 1 and (2) on Jalan Mayjen Sutoyo, East Jakarta here in after called Campus 2. The Campus 1 yard is 82m² and the Campus 2 yard is 134,000m². The office buildings, lectures and laboratories area is 1,397,959m²; sports area (soccer, futsal, basketball and volley) is 10,331.8m²; parking area is 20,870.8m²; gazebo is 115m²; lecturer housing 471m²; student dormitory 662.3m²; Biology garden 42m²; canteen 214m²; minimarket is 255m² and the rest is campus park.





3.2. Campus Yard Management as Learning Facility and Source in UKI

UKI yard was utilized as learning facility and source to assist the teaching process; subsequently to achieve the UKI vision and mission. The campus yard management functioned as a media to reach the optimal result of intelligent and softskill graduates production, a response to the stakeholders' demand on officers' cognitive, affective, and psychomotor competence.

The good UKI yard management, in accordance with the Regulation of the Minister of Research, Technology and Higher Education number 44 of 2015 on National Standards of Higher Education, particularly the Learning Facilities and Infrastructure Standard, has brought utilization balance on the use of its yard as sport area, plant conservation, classroom, teaching facility, parking area, garden, and green house (picture 1 and 2).

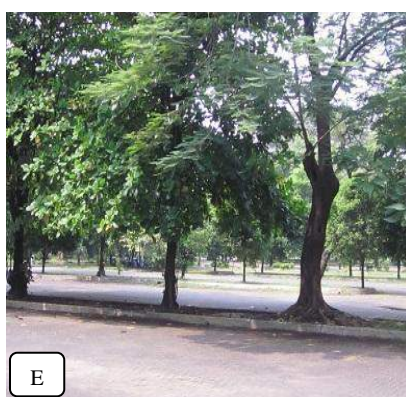




Figure 1. Pattern of UKI yard: a. Yard/ UKI main street; b. backyard (fronyard of students dormitory); c. guest-house and green-house park; d. futsal outdoor area; e. parking area, f. student dormitory yard; G and H. Building A.

3.3. Plants in the UKI Yard

Campus yard plants have been documented by Silalahi (2015; 2016), particularly those were as crops, ornamental and shady plants, but their use as learning facility has never been studied. By species the ornamental plants identified were forty-five, shade were twenty-four, food producers were sixteen, and other functions were fourteen (Silalahi 2015).

Those plants are only utilized by Biology Education Study Program, Faculty of Teacher Training and Education, UKI as a teaching aid, particularly as sample specimens and materials for herbaria collection in teaching High Taxonomy Plant Course, Low Plant Taxonomy, Plant Morphology, Plant Physiology, and Plant Ecology. The role of each yard plants varies according to the courses, however.

Contextually various characters of leaves, stems, roots, flowers and fruit, the core subject of Plant Morphology, were studied through the yard utilization of UKI. Several species of plant leaf diversity identified, for example plants that have and compound of rambutan (*Nephelium lappaceum*), kembangmerak (*Caesalpinia pulcherrima*), mahogany (*Swietenia macrophylla*), tabebuya (*Tabebuia* sp.), angsana (*Pterocarpus indicus*), and trembesi (*Albizia saman*). The widely-used plants to study the morphology of single leaves were *Hibiscus rosa-sinensis* leaves, *Hibiscus tiliaceus* leaves, and *Sonchus oleraceus* leaves, *Colocasia esculenta* leaves. Furthermore, the direct observation of leaf structure has made simplicity to the students' learning.

Additionally various garden plants utilization in teaching morphological structure of stem revealed high frequency. Plants have a various trunk structure, namely wood (trees and shrubs) and herbs. For the stem structure various plants in UKI yard have rectangular, such as *Physalis unguiculata* stems, stems of *Orthosiphon stamineus*, *Justicia gendarussa* stems; while triangular found in UKI such as *Cyperus rotundus* and other types of Cyperaceae.



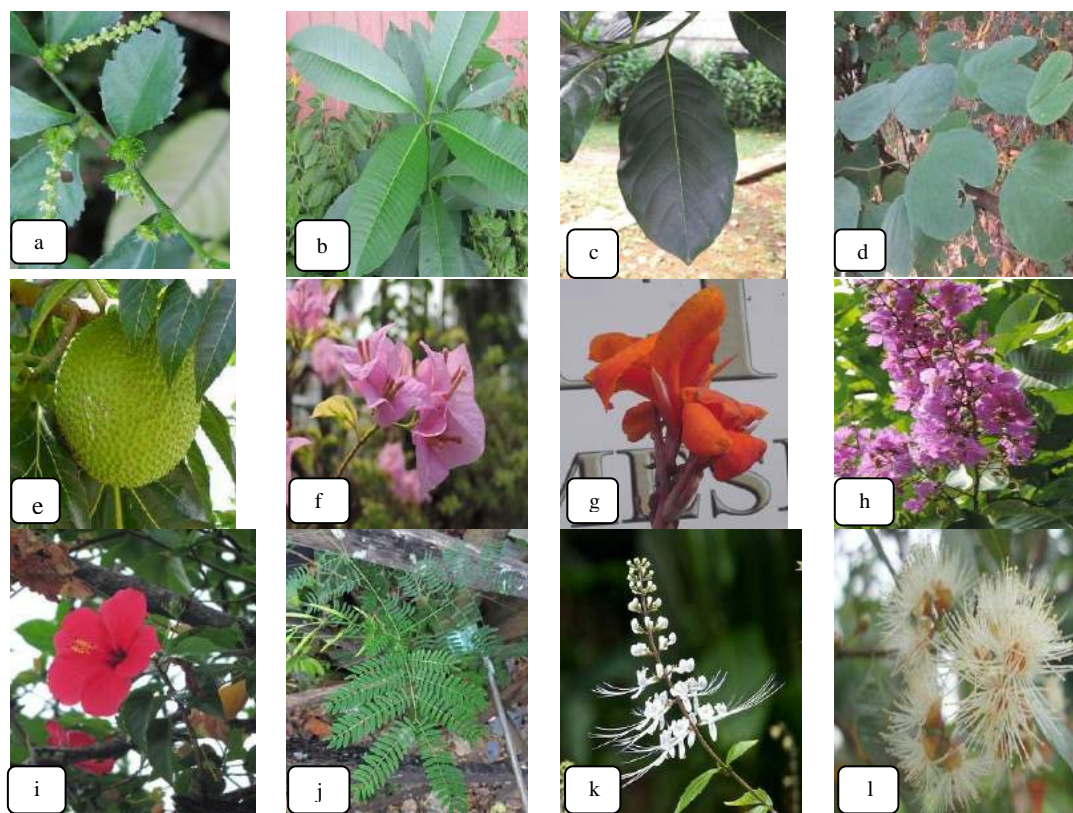


Figure 2. Some plants indintified in UKI used as teaching aid. a. *acalyphasiamensis*; b. *alstoniascholaris*; c. *artocarpusheterophyllus*; d. *bauhinia purpurea*; e. *artocarpuscamansi*; f. *bougenvilleaspectabilis*; g. *canna hybrid*; h. *lagerstroemia speciosa*; i. *hibiscus rosa-sinensis*; j. *leucaenaleucocephala*; k. *orthosiphon aristatus*; l. *syzygiumoleana*.

Plants found were utilized in teaching High Taxonomy Plant course, like the identification of habitus (tree, shrub, and herb), leaf (shape, color, leaf shape, leaf basal, leaf tip, and bone structure leaves), stems (color, shape), flowers (flower structure).

To facilitate the collection and maintenance of plants needed by Biology Education Study Program green house and Biology garden were made. Plants found in green house sambiroto (*Andrographispaniculata*), aglaonema (*Aglaonema* sp.), lidahmertua (*Sansiviera* sp.), cassava (*Manihottutilisisma*), and taro (*Colocasiaesculenta*). On the contrary, plants found in biology garden were rambutan (*Nepheliumlappaceum*), starfruit (*Averrhoa carambola*), coconut (*Cocos nucifera*), mango (*Mangiferaindica*), and sawo (*Manilkarazapotta*).

In terms of management the green house seemed more optimally organized than biology garden as green house was relatively narrower and more commonly used than biological gardens. Some student's activities were conducted in green house, such as student' research data collection and place to increase interest and talent, which is generally organized by Students Association.

3. Discussion

The campus yard is a landscape in which rich biodiversity is found. This implies the importance of its comprehensive management as it definitely contains added-values in learning including as biodiversity conservation and teaching facility and source. This study revealed that UKI yard functioned as learning resources, sports area, biodiversity conservation, and shelter.

Placement and management of plants in the UKI yard are done by considering the function of each area. Area used for parking, for instace, lot leafy canopy, such as *ketapang* (*Termilia catappa*) and *globokantiang* (*Polyalthia longifolia*) was planted. On the other hand, the plants with lush and densed





structures, such as *bintaro* (*Carberramangas*) and *tanjung* (*Mimusposeleugi*) were planted to visually decorate the parking spaces.

All sides of pitch, area for football, and volleyball court, the UKI yard utilized as sport area, were planted with pulai (*Alstoniascholaris*) since it plays a role as shade, contains straight trunk and thin coverage consequently offers grass growing possibility around. The educational function of campus yard influences the studies in King Saud University, Riyath (El-Juhany and Al-Harby, 2013), Buca Faculty of education Campus (Ugulu^{et al.}, 2012) and Universitas Bengkulu (Wyriono and Nurliana, 2011). The researches, however, focused on useful medicinal plants (Patel, 2012; Witanriet *al.*, 2015), vascular plants (Ugulu^{et al.}, 2012), ornamental plants (Juhanydan Al-Harby, 2013), students' understanding on campus yard plants (WyrionodanNurliana, 2011; Silalahi, 2016), and its distribution (Silalahi 2016b).

Silalahi (2016b) suggested several alternatives developed to determine the types of plants in the campus yard, namely (1) balancing the number and types of food producer plants for fauna; (2) planning the zonation system that is one zone developed to keep the fertility and another one for fauna food producer. Another alternative that can be developed in the selection of plants on campus is the division of zones to restore soil fertility (Silalahi 2016).

The management of the yard includes (1) standard setting, (2) implementation of procurement standard, (3) evaluation of standard implementation, (4) control of standard evaluation results and (5) standard improvement (UKI Internal Quality Assurance System, 2015). The UKI Internal Quality Assurance System on infrastructure standards consists of land, buildings, classrooms, student activity units, faculty rooms, leadership rooms, administrative rooms, laboratories, library rooms, sports facilities, public facilities and maintenance, safety and security facilities. The observation result showed the facility availability and large parking lot independently used by local residents.

The sufficient sports field is unoptimally utilized and irregularly scheduled. It is independently used by students, lecturers, administrative officers, and local residents, and its facility and infrastructure goes to the General Administration Bureau's responsibility under the Vice Rectors of Finance, Human Resources, and General Administration. However, the work program of Vice Rector for Student Affairs, Law and Cooperation in 2017 emphasized the renovation of some sports field into ones for which student's talent training and development turn to a reality. Currently UKI provides scholarships for athletes so that the UKI sports standards are adjusted to national sports standards.

The gazebo facilities equipped with wifi were used for students' discussion, work, relaxing and waiting. Its unoptimized utilization revealed as the electricity unavailability appeared and opened access system, accessible for local residents, practiced.

4. Conclusion

1. The synergistic and multi-layered responsibility ranging from UKI Foundation, Rectorate, Faculty, and Study Program are practiced to manage the campus yard.
2. UKI yard is utilized as sport area, students' gathering and discussion, practicum, ornamental and fruit plant sources, and conservation.
3. As a conservation spot various types according to plants structure, like trees, shrubs and herbs were found.

References

1. Barnawi & M. Arifin. Manajemen Sarana dan Prasarana Sekolah, Jogjakarta. 2012. Ar-Ruzz Media
2. Borang Akreditasi Universitas Kristen Indonesia Tahun 2016
3. El-Juhany, L.I., and A.A., Al-Harby. Status and Diversity of Ornamental Plants in King Saud University Campus at Riyadh, Saudi Arabia. *American-Eurasian J. Agric. & Environ. Sci.* 2013.13(4): 471-478.
4. Patel, D.K. Medicinal Plants in G.G.V Campus Bilaspur, Chhattisgarh in Central India. *International Journal Med. Arom. Plants.* 2012. 2(2): 293-300.





5. Peraturan Menteri Riset dan Pendidikan Tinggi nomor 44 Tahun 2015 tentang Standar Nasional Pendidikan Tinggi
6. Putrika, A. Komunitas Lumut Epifit di Kampus Universitas Indonesia, Depok [*Tesis*]. Departemen Biologi FMIPA, Universitas Indonesia, Depok. 2012..
7. Silalahi, M. Pengetahuan Mahasiswa Prodi Pendidikan Biologi FKIP UKI terhadap Keanekaragaman Tumbuhan di Lingkungan Kampus Universitas Kristen Indonesia Cawang, Jakarta Timur Sebagai Langkah Awal untuk Mewujudkan *Green Campus*. Laporan Akhir Penelitian. FKIP. Universitas Kristen Indonesia. 2015.
8. Silalahi, M. Pengetahuan Mahasiswa terhadap Keanekaragaman Tumbuhan di Lingkungan Kampus (Studi Kasus Prodi Pendidikan Biologi UKI), *JurnalAlkaunyah* 2016a.9(2): 33-39.
9. Silalahi, M. Keanekaragaman dan Distribusi Tumbuhan Bermanfaat di Pekarangan Kampus Universitas Kristen Indonesia (UKI) Cawang, Jakarta Timur. *Jurnal Biologi*.2016b. Volume 20 Nomor 2 Hal: 75-8
10. Suharno. Manajemen Pendidikan (Sebuah Pengantar bagi Calon Guru), Surakarta: Lembaga Pengembangan Pendidikan UNS dan UPTPress. 2008.
11. Sulistyorini. Manajemen Pendidikan Islam :Konsep, Strategi Dan Aplikasi, Yogyakarta: SuksesOffset. 2009.
12. Toni, A. Struktur Komunitas Vegetasi dan Stratifikasi Tumbuhan di Hutan Kota Universitas Indonesia. [*Tesis*]. Program Studi Biologi, Program Pascasarjana, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Indonesia. Depok, viii + 123 hlm. 2009.
13. Ugulu, I., Y. Dogan, and T. Kesercioglu. The Vascular Plants of Buca Faculty of Education Campus (Izmir): Contribution to educational practices. *Eurasia J. Biosci.* 2012.6: 11-23.
14. Wiryono, and S. Nurliana. The Knowledge of Bengkulu University's Forestry Students of Tree Diversity in Their Campus. *Nusantara Bioscience*,2011.3(2): 98-103.
15. Witantri, R.G., ECA. Ruspendi, and D.S. Saputro. Keanekaragaman pohon berpotensi obat anti kanker di kawasan Kampus Kentingan Universitas Sebelas Maret, Surakarta, Jawa Tengah. *Prosiding seminar nasional Biodiversitas Indonesia*. 2015.1(3): 477-483.

