Budapest International Research and Critics Institute-Journal (BIRCI-Journal)
Volume I, No 3, October 2018, Page: 208-224
e-ISSN: 2615-3076(Online), p-ISSN: 2615-1715(Print)
www.birci-journal.com
emails; birci.journal@gmail.com
birci.journal.org@gmail.com

Business of Local Fruit and Vegetables in Jember District as a Support of Food Security, Indonesia

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Abstract: *Local fruits and vegetables contribute to food security in the area. Efforts to gather information about local fruits and vegetables is very important. This is due to the diversity of local fruit and vegetables are endangered due to the penetration of imported fruits and vegetables that increasingly dominate, changing consumption patterns and land use. This study examines the diversity of local fruits and vegetables in Jember. The research method using exploratory survey which aims to gather information with a qualitative approach. The research instrument is observation sheet, interview and documentation. The survey area covers 31 districts in Jember, namely:Subdistrict Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, Sumbersari and Patrang, Respondents were interviewed are traders of fruit and vegetables in the market and the centers of the fruit. The results of this exploratory study found that 46 kinds of local fruits and 52 kinds of local vegetables. 52.2% met the local fruit is cultivated, ie 24 types of local fruits such as:Avocado, Grapes, Belimbing, Duku, Durian, Guava, Guava Water, Orange Semboro, Orange Large, longan, mango, mangosteen, Melinjo, jackfruit, pineapple, papaya, banana, rambutan, Salak, Sawo, passionfruit, soursop and breadfruit. 30.8% of local vegetables that have been cultivated at 16 types of local vegetables such as: Bawang Merah, Bawang leaves Cabbage, Cauliflower, chinese cabbage / mustard, Long Bean, Large Chilli, chilli, Mushroom, Tomato, eggplant, beans, cucumber, pumpkin Siam, Kale and Spinach,*

Keywords: *fruits and vegetables locally; Jember; food security*

I. Introduction

Local fruits and vegetables are part of Indonesia's biodiversity, known as Mega Biodiversity Country. Indonesia including in eight mega biodiversity countries in the world, both flora and fauna spread is very wide. Biological riches include a variety of plants, animals and microbes. There are approximately 28,000 species of plants, 350,000 species of animals and 10,000 microbes that live naturally in Indonesia (Surtikanti, 2009: 124).

Indonesian forests have great potential in contributing to the provision of food for the community. From the forest there are 77 types of food sources of carbohydrates, 26 kinds of

beans, 389 types of grains and fruits, 288 kinds of vegetables, 110 kinds of herbs and spices, 75 types of oils and fats, 40 kinds of beverage ingredients and 1260 species of medicinal plants (Kuswiyati et al in Suhardi et al, 2002). This proves that Indonesia is rich (Samantha, 2014).

Indonesia is an agricultural country that is rich in agricultural products, including fruits and vegetables locally. Indonesia even is one of the largest fruit producer in the world. But the Indonesia itself is still rarely eat fruit. FAO recommendations, ideally a fruit consumed as much as 73 kg / capita / year. While the new Indonesian society consumes 34.55 kg / capita / year. UN health agency (WHO) recommends 400 grams of fruit and vegetables per day. The American Heart Association recommends 8 servings or 4.5 cups of various types of fruits and vegetables per day. The Health Act 36 of 2009 recommended to consume 3-5 servings of vegetables and 2-3 servings of fruit per day (Saleh, 2017). Indonesian society still considers fruits and vegetables is not the main menu, but only as a food supplement only.

Diversity of local fruits and vegetables is a wealth of biodiversity is very important in life, because fruits and vegetables are one human consumption. Local fruits and vegetables contribute to food security in the region through optimizing the utilization of resources of local fruits and vegetables as a provider of food. Associated with growing food needs, the necessary efforts to increase the utilization of crop diversity to meet human needs (Pugalenthi et al, 2005). Local fruits and vegetables are a natural supermarkets for residents in the area. Local fruits and vegetables contain a variety of phytonutrient that also provide important nutrients in the area, which may not be available in the absence of local fruits and vegetables. Fruits and vegetables in general is one commodity that is necessary for humans to live a healthy life. Fruits and vegetables are sources of water and nutrients, a source of vitamins and is one of the largest natural source of antioxidants in the world (Saleh, 2017).

The nutritional content as diverse as vitamin A, B, C, potassium, iron, protein and antioxidant compounds, indicating that the cultivation and consumption of vegetables may help in dealing with malnutrition in Indonesia (Becker, 2003; Madalla et al, 2013). Local fruits and vegetables are fruits and vegetables native to the area which has been widely cultivated and consumed or fruits and vegetables that have grown long introduction and known to the public in a particular area (Suryadi and Kusumana, 2004).

Jember is an agricultural area, Jember general economy based on agriculture, the maintenance and management of natural resources to be paramount and important, so it is expected that implemented economic development oriented to the development of environmentally sound. Jember as one of the rice granary of the East Java province, showed that the agricultural sector is a sector that has a significant role. Administratively, the district of Jember is divided into 31 districts and unexplored and recorded properly. Efforts to explore and identify potential local fruits and vegetables is very important in every area. This is due to the late decision by the local fruit and vegetable fruit and vegetable import penetration to the regions, consumption patterns are changing and land conversion.

This study aimed to obtain information about the database of local fruits and vegetables are circulating and sold in the markets and centers selling fruit and vegetables in Jember. This research is part of the first year of study on Developing Local Encyclopedia of Fruits and Vegetables Jember Multimedia Based Learning as a Source of Life Sciences in Support of Food Security.

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II. Methodology

Exploratory research using a survey method with a qualitative approach. The research instrument consisting of pieces of observation, interviews and documentation. Surveys conducted in April - May 2018.

2.1 Research Areas

a) Jember district has an area of approximately 3293.34 km2, with a length of approximately 170 Km coast.
b) Jember is located at an altitude of 0-3300 meters above sea level (asl), with a height of Jember urban areas approximately 87 meters above sea level (asl). Most of the territory is at an altitude of between 100 and 500 meters above sea level is 37.75%. Topographical conditions indicated by the slope or elevation, most of Jember District (36.60%) with 0 to 2% slope.
c) Climate in Jember is a tropical climate. Figures temperatures ranging from 23ºC - 31ºC.

Location survey found in 31 districts in Jember (Jember Regency, 2018), namely: Subdistrict Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Arjasa, Pakusari, Kalisat, Ledokombo , Sumberjambe, Sukowono, Jelbuk, Kaliwates, Sumbersari and Patrang (Figure 1), The study was conducted in the markets and centers of fruits and vegetables in each district. The respondents are the local fruit and vegetable traders. Data collected includes the name of a plant, plant origin (aquaculture), morphology colors of fruits and vegetables and vegetable parts are sold. Fruits and vegetables are locally obtained and documented by the cameras and samples were taken for identification.

Figure 1. Map of Jember District (Source: Jember District Government, 2018).

2.2 Identification of Plant Species

Local fruit and vegetable samples collected subsequently identified in the laboratory. Identification using book of determination: Flora of Java Volume I, II, III (Backer and Bakhuzein, 1968), A Practical Field Guide to Weeds of Rice in Asia (Caton et al, 2010), the Weed Identification (Naidu, 2012) and The Institute for Functional Medicine, 2014.

III. Research Result

3.1 Fruits and Vegetables Jember Local Food Security Support

Diversity of local fruits and vegetables Jember found in the market and the centers of the fruit are as many as 46 types of local fruits and 52 kinds of local vegetables. The survey results of local fruits and vegetables as well as distribution in 31 districts in Jember are presented in Tables 1 and 2.

Table 1. Local Fruits Found in 31 sub-districts in Jember

No.	Crop type	Species name	Points of Distribution (sub-district)
1.	Avocado.	*(Persea americana).*	Gumukmas, Puger, Wuluhan, Ambulu, Silo, Mayang, Mumbulsari, Jenggawah, Rambipuji, Balung, Semboro, Sumberbaru, Embankment, Panti, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Sumbersari, and Patrang.
2.	Black Grape.	(*Vitis vinifera).*	Ambulu, Rambipuji, Sumbersari, and Patrang.
3.	Belimbing Manis.	*(Averrhoa carambola* L).	Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Panti, Arjasa, Pakusari, Kalisat, Sumberjambe, Sukowono, Jelbuk, Kaliwates, Sumbersari, and Patrang.
4.	Starfruit.	*(Averrhoa bilimbi* L).	*Ambulu, Balung, embankments and Kaliwates.*
5.	Cantaloupe	*(Cucumis melo).*	*Ambulu, Balung, Embankment, Sukowono, Kaliwates and Patrang*
6.	Red Dragon Fruit.	*(Hylocereus polyhizus).*	Ambulu, Balung, embankments and Kaliwates.
7.	White Dragon Fruit.	*(Hylocereus undatus).*	Ambulu, Embankment, Kaliwates and Balung.
8.	Durian.	*(Durio zibethinus).*	Silo, Mayang, Mumbulsari, Jenggawah, Rambipuji, Balung, Semboro,

			Sumberbaru, Embankment, Bangsalsari, Panti, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, Sumbersari, and Patrang.
9.	Guava.	*(Psidium guajava* L).	Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Silo, Mayang, Mumbulsari, Jenggawah, Rambipuji, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Panti, Sukorambi, Arjasa, Pakusari, Ledokombo, Sumberjambe, Jelbuk, Kaliwates, Sumbersari, and Patrang ,
10.	Guava Crystals.	*(Psidium guajava* L).	Ambulu, Embankment, Kaliwates and Balung.
11.	Lime.	*(Citrus aurantifolia).*	Ambulu, Embankment, Kaliwates and Balung.
12.	Semboro orange.	*(Citrus sp).*	Kencong, Gumukmas, Wuluhan, Ambulu and Mayang,
13.	Kedondong.	*(Spondias dulcis).*	Ambulu, Embankment, Kaliwates and Balung.
14.	Lengkeng.	*(Dimocarpus longanum).*	Patrang
15.	Manalagi mango.	*(Mangifera indica).*	Puger, Ambulu, Mayang, Rambipuji, Sukorambi, Pakusari, and Patrang.
16.	Mango Gadung.	*(Mangifera indica).*	Wuluhan, Silo, Mayang, Jenggawah, Ajung, Balung, Semboro, Embankment, Bangsalsari, Panti, Arjasa, Pakusari, Ledokombo, Sumberjambe, Jelbuk, and Patrang.
17.	Melinjo	*(Gnetum gnemon).*	Puger, Ambulu, Silo, Ajung, Panti, Arjasa, Pakusari, Kalisat, and Sumberjambe.
18.	Pineapple.	*(Ananas comosus).*	Puger and Rambipuji
19.	Nangka.	*(Artocarpus heterophyllus).*	Gumukmas, Puger, Wuluhan, Ambulu, Silo, Mayang, Mumbulsari, Ajung, Balung, Sumberbaru, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Jelbuk, Kaliwates, Sumbersari, and Patrang.
20.	Papaya Thailand.	(Carica papaya L).	Gumukmas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Semboro, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Arjasa,

			Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Sumbersari, and Patrang.
21.	Papaya California.	(Carica papaya L).	Gumukmas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Semboro, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Sumbersari, and Patrang.
22.	Ambon banana.	*(Musa Paradisiaca).*	Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, Sumbersari, and Patrang.
23.	Bananas Barlin.	*(Musa Paradisiaca).*	Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, Sumbersari, and Patrang.
24.	Bananas Kepok.	*(Musa acuminata).*	Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, Sumbersari, and Patrang.
25.	Bananas Nangka.	*(Musa sp* L).	Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Umbulsari,

			Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, Sumbersari, and Patrang.
26.	Bananas Raja.	*(Musa sapientum).*	Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, Sumbersari, and Patrang.
27.	Salak Java.	*(Salacca edulis).*	Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Umbulsari, Semboro, Sumberbaru, Pakusari, Kalisat, Sumberjambe, Jelbuk, and Sumbersari.
28.	Sawo.	*(Manilkara zapota).*	Gumukmas, Puger, Wuluhan, Ambulu, Silo, Mayang, Jenggawah, Ajung, Balung, Sumberbaru, Embankment, Bangsalsari, Arjasa, Pakusari, Kaliwates, Sumbersari, and Patrang.
29.	Watermelon Red.	*(Citrullus lanatus).*	Kencong, Gumukmas, Puger, Wuluhan, Ambulu, Silo, Ajung, Rambipuji, Balung, Umbulsari, Jombang, Embankment, Bangsalsari, Panti, Arjasa, Jelbuk, Kaliwates, Sumbersari and Patrang.
30.	Yellow Watermelon.	*(Citrullus lanatus).*	Kencong, Ambulu, Rambipuji, Balung, Embankment, Arjasa, Kaliwates, Sumbersari and Patrang
31.	Sirsak.	*(Annona muricata).*	Gumukmas, Puger, Ambulu, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Semboro, Sumberbaru,
32.	Srikaya.	*(Annona aquamosa* L).	Ambulu, Balung, Kaliwates, Embankment, Patrang, Sumbersari, Arjasa and Jelbuk.
33.	Sukun.	*(Artocarpus communis)*	Gumukmas, Ambulu, Silo, Mayang, Mumbulsari, Jenggawah, Ajung,

			Balung, Semboro, Panti, Pakusari, Ledokombo, Sumberjambe, Kaliwates, and Patrang.
34.	Large orange	*(Vitis vinifera).*	Ambulu, Silo, Mayang, Jenggawah, Ajung, Semboro, Pakusari, and Sumbersari.
35.	Buni fruit.	*(Antidesma bunius).*	Sumbersari and Sukorambil.
36.	fruit Butter	*(Nerium oleander* L)	Ambulu, Kencong, Wuluhan and Bangsalsari.
37.	Ciplukan.	(Physalis angulata L).	Ambulu, Wuluhan and Sukowono.
38.	Duku.	*(Lansium domesticum).*	Wuluhan, Silo, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Semboro, Sumberbaru, Embankment, Bangsalsari, Panti, Sukorambi, Arjasa, Kalisat, Ledokombo, Sumberjambe, Sukowono, Jelbuk, Kaliwates, Sumbersari, and Patrang.
39.	Rambutan.	*(Nephelium lappaceum* L).	Kencong, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mumbulsari, Jenggawah, Ajung, Rambipuji, Umbulsari, Jombang, Sumberbaru, Embankment, Panti, Sukorambi, Arjasa, Kalisat, Ledokombo, Sumberjambe, Jelbuk, Kaliwates, and Patrang.
40.	Passion fruit.	*(Passiflora edulis).*	Mayang, Jenggawah, and Sumbersari.
41.	Pomegranate.	*(Punica granatum* L).	Kencong, Ambulu, Kaliwates, Jenggawah, Ajung, Pakusari and Sumbersari.
42.	Water apple.	*(Eugenia aquea).*	Gumukmas, Puger, Ambulu, Mayang, Mumbulsari, Jenggawah, Ajung, Sumberbaru, Embankment, Kaliwates, and Patrang.
43.	Mangosteen.	*(Garcinia mangostana* L).	Wuluhan, Silo, Mayang, Jenggawah, Ajung, Balung, Semboro, Embankment, Bangsalsari, Panti, Arjasa, Pakusari, Ledokombo, Sumberjambe, Jelbuk, and Patrang.
44.	Kenitu.	*(Chrysophyllum cainito).*	Ajung, Gumukmas, Rambipuji, Jombang, Arjasa and Sumbersari
45.	Matoa.	(Pometia pinnata).	Rambipuji, Sukorambi and Sumbersari.
46.	Melon Apple	*(Cucumis melo).*	Kencong, Ambulu, Rambipuji, Balung, Embankment, Arjasa, Kaliwates, Sumbersari and Patrang
	Total	**46**	

Of the 46 types of local fruits were found, 52.17% were found to have been cultivated, namely Avocado, Grapes, Belimbing, Duku, Durian, Guava, Guava Water, Orange Semboro, Orange Large, longan, mango, mangosteen, Melinjo, Nangka, pineapple, papaya, banana, rambutan, Salak, Sawo, passionfruit, soursop and breadfruit.

Table 2. Local Vegetables Found in 31 sub-districts in Jember

No.	Vegetables	Distribution Points
1.	Bean (Phaseolus vulgaris Linn)	Kencong, Ambulu, Balung, Umbulsari, Sukorambi.
2.	Large chilli (Capsicum annuum L.)	Kencong, Gumuk Mas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang Sari Mumbul, Jenggawah, Ajung, Rambipuji, Bannerman Sari, Semboro, Jombang, Sumberbaru, Ward Sari, Sukorambi, Ledokombo, Sumber Jambe, Sukowono, Patrang.
3.	Cayenne pepper (Capsicum frustescenns L)	Kencong, Gumuk Mas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbul Sari, Jenggawah, Ajung, Rambipuji, Balung, Bannerman Sari, Semboro, Jombang, Sumberbaru, Embankment, Panti, Sukorambi, Arjasa, Pakusari, Kalisat, Ledokombo , Sumber Jambe, Sukowono, Jelbuk, Sumbersari, Patrang.
4.	Pigeonpea (Cajanus cajan L.)	Kalisat, Jenggawah and embankments.
5.	Long beans (Vigna unguiculata sesquipedali)	Kencong, Gumuk Mas, Puger, Wuluhan, Ambulu, Tempurejo, Silo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Umbulsari, Semboro, Jombang, Sumberbaru, Embankment, Bangsalsari.
6.	Cowpeas (Psophocarpus tetragonolobus L.)	Kaliwates, Kalisat, Jenggawah, Embankment, Ambulu, Mumbulsari, Sumbersari and Panti.
7.	Soy (Glycine max)	Embankment, Kalisat and Kaliwates.
8.	Kluwih (Artocarpus camansi)	Kaliwates, Kalisat, Jenggawah and embankments.
9.	Kondur(Benincasa hispida)	Kaliwates
10.	Keratok (Phaseolus lunatus)	Kalisat.
11.	pumpkin China (Lagenaria siceraria)	Kaliwates, Kalisat, Jenggawah and embankments.
12.	Summer squash (Cucurbita moschata Duschesne)	Kaliwates, Kalisat, Jenggawah and embankments.
13.	Chayote (Sechium edule)	Ledokombo.
14.	cucumber (Cucumis sativus L.)	Gumuk Mas, Puger, Ambulu, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji,

		Balung, Umbulsari, New Source, Sukorambi, Ledokombo, Sumbersari
15.	okra (Abelmoschus esculentus L.)	Kaliwates
16.	Oyong / gambas (Luffa acutangula)	Jenggawah, Embankment, Kalisat and Kaliwates.
17.	Pare (Momordica charantia)	Puger, Wuluhan, Silo, Ajung, Jenggawah, Embankment, Kalisat and Kaliwates.
18.	petai china (Laucaen gluca)	Kaliwates and Kalisat.
19.	Pete (Parkia speciosa)	Ambulu, Tempurejo, Silo, Mayang, Rambipuji, Arjasa, Pakusari, Kalisat, Ledokombo, Sumberjambe, Sukowono and Kaliwates.
20.	Tekokak (Torvum Solanum sp)	Kaliwates, Kalisat and embankments.
21.	Eggplant (Solanum melongena)	Kencong, Gumuk Mas, Ambulu, Tempurejo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Umbulsari, Jombang, New Source, Embankment, Ward Sari, Sari Nail, Kalisat, Ledokombo, Sumberjambe, Jelbuk, Sumbersari.
22.	eggplant Wren (Solanum melongena)	Kencong, Gumuk Mas, Ambulu, Tempurejo, Mayang, Mumbulsari, Jenggawah, Ajung, Rambipuji, Balung, Umbulsari, Jombang, New Source, Embankment, Ward Sari, Sari Nail, Kalisat, Ledokombo, Sumberjambe, Jelbuk, Sumbersari.
23.	Tomato (Solanum lycopersicum L.)	Gumus Mas, Ambulu, Silo, Mayang, Jenggawah, Ajung, Rambipuji, New Source, Sukorambi, Kalisat, Ledokombo, Sumber Jambe
24.	Green spinach (Amaranthus spinosus)	Panti, Sukorambi, Ledokombo, Kaliwates
25.	Red spinach (Amaranthus gangeticus L.)	Panti, Sukorambi, Ledokombo, Kaliwates
26.	Onion leaves (Cleome rutidospermae)	Wuluhan, Jenggawah, Jombang.
27.	Boboan (Allium fistulosum L)	Jenggawah.
28.	Caisin / mustard noodles (Brassica campestris L-spp.)	Gumuk Mas, Balung, Embankment, Sukorambi, Kaliwates.
29.	Leaves Katu (Sauropus androgynus)	Jenggawah, embankments and Kaliwates.
30.	Moringa leaves(Moringa oleifera Lam.)	Kaliwates and Bangsalsari.
31.	Bay leaf (Syzygium polyanthum)	Kaliwates, Kalisat and embankments.
32.	Cassava leaves (Manihot esculenta)	Kaliwates, Kalisat, Jenggawah and embankments.

33.	Papaya leaf (Carica papaya L.)	Kencong, Jenggawah, Embankment, Kalisat and Kaliwates.
34.	genjer (Limnocharis flava)	Kencong, Jenggawah, Embankment, Kalisat and Kaliwates.
35.	Gunda(Sphenoclea zeylanica Gaertn)	Kaliwates
36.	Junggulan(Erechtitesvalerianifolia Raf.)	Kaliwates
37.	kale water (Ipomea aquatic)	Panti, Sukorambi, Ledokombo, Kaliwates
38.	kale land (Ipomea reptans Poir)	Panti, Sukorambi, Ledokombo, Kaliwates
39.	Basil (Ocimum sanctum L.)	Kaliwates, Kalisat, Jenggawah and embankments.
40.	Marigolds (Cosmos caudatus)	Kaliwates, Kalisat, Jenggawah and embankments.
41.	Cabbage (Brassica oleracea)	Puger, Wuluhan, Ambulu, Jenggawah, Balung, Panti
42.	Fern (Diplazium esculentum)	Kaliwates, Kalisat, Jenggawah and embankments.
43.	Sawi (Brassica pekinensia L.)	Kaliwates, Kalisat, Jenggawah and embankments.
44.	watercress (Nasturtium spp.)	Kaliwates, Kalisat, Jenggawah and embankments.
45.	Celery (Apium graveolens L.)	Kaliwates, Kalisat, Jenggawah, Patrang, Jelbuk, Mumbulsari, Balung and embankments.
46.	lettuce leaves (Lactuca sativa L.)	Kaliwates, Jenggawah and embankments.
47.	Cauliflower (Brassica oleracea)	Ambulu
48.	papaya flower(Carica papaya L.)	Kaliwates, Jenggawah and embankments.
49.	Flowers Turi (Sesbania grandiflora)	Kaliwates and embankments.
50.	Shallots (Allium Colocasia esculenta)	Wuluhan, Jenggawah, Jombang
51.	Taro (Colocasia esculenta)	Kaliwates, Kalisat, Jenggawah and embankments.
52	mushroom	Wuluhan, Silo, Ajung, Rambipuji, Balung, Panti, Patrang.

Of the 52 types of local vegetables are found,30.8% found already cultivated, Namely: Shallots (*Allium ascalonicum*), Onion leaves (Allium fistulosum L), Cabbage (Brassica oleracea), cauliflower (*Brassica oleracea*), Chinese cabbage / mustard (*Brassica campestris* L-spp.), Long Beans (Vigna unguiculata sesquipedali), Large Chilli (Capsicum annuum L.), chilli (Capsicum frustescenns L.), Mushroom, Tomato (Solanum lycopersicum L.), eggplant (Solanum melongena), beans (Phaseolus vulgaris Linn) , Cucumber (Cucumis sativus L.), Pumpkin Siam (Sechium edule), kale (*Ipomea* sp.) And Spinach ((Amaranthus spinosus)).

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Volume I, No 3, October 2018, Page: 208-224
e-ISSN: 2615-3076(Online), p-ISSN: 2615-1715(Print)
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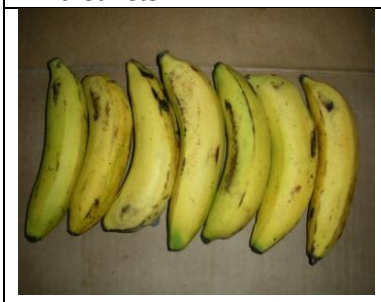
Research has found that 46 kinds of local fruits and 52 kinds of local vegetables. Documentation of the diversity of local fruit Jember found in more than 20 sub-districts can be seen in Figure 2.

Figure 2. Local Fruits Kab. Jember found in more than 20 districts

 Avocado (Persea americana) 23 sub-districts	 Starfruit (carambola Averrhoa L):25 sub-districts	 Duku (Lansium domesticum) 22 sub-districts
 Durian (Durio zibethinus) 21 districts	 Guava (Psidium guajava L) 25 sub-districts	 Papaya (Carica papaya L) 27 sub-districts
 Banana (Musa Paradisiaca) 31 districts	 Rambutan (Nephelium lappaceum L) 31 districts	 Salak Java (Salacca zalacca) 20 sub-districts

The documentation of the diversity of local vegetables Jember found in more than 12 districts can be seen in Figure 3.

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Figure 3. Local Vegetable Kab. Jember found in more than 12 districts

 Great chili (Capsicum annuum L) 22 subdistricts	 Cayenne pepper (Capsicum frustescenns L) 29 sub-districts	 Long beans (Vigna unguiculata) 18 districts
 Cucumber (Cucumis sativus L.) 14 districts	 Eggplant (Solanum melongena) 22 sub-districts	 Tomato (Solanum lycopersicum L): 12 districts

The typical fruit found in Jember namely kenitu fruit, which is found in the 6 districts, the District Ajung, Gumukmas, Rambipuji, Jombang, Arjasa and Sumbersari, Can be seen in Figure 4.

Figure 4. Typical Fruit Kenitu (Chrysophyllum cainito): 6 districts

3.2 The color spectrum Local Fruits in Jember

Based on the research results owned fruit color spectrum in Jember has a diversity of colors, namely red, green, yellow, orange (orange), blue / purple / black and white / tan / brown. Colored fruits contain phytochemicals (phytonutrients) are different from each other. phytochemical compounds are compounds found in fruits that give it flavor, aroma, or a distinctive color on the fruit.

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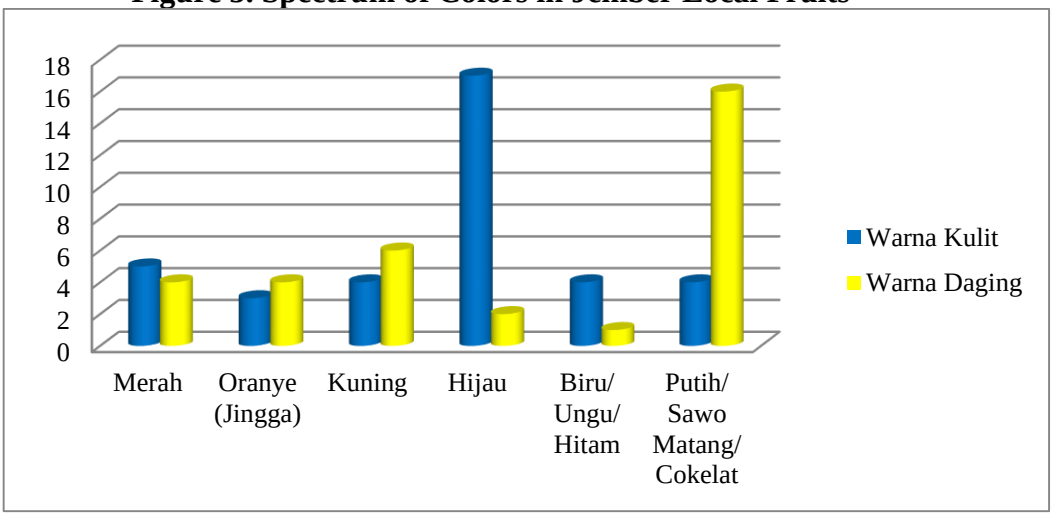
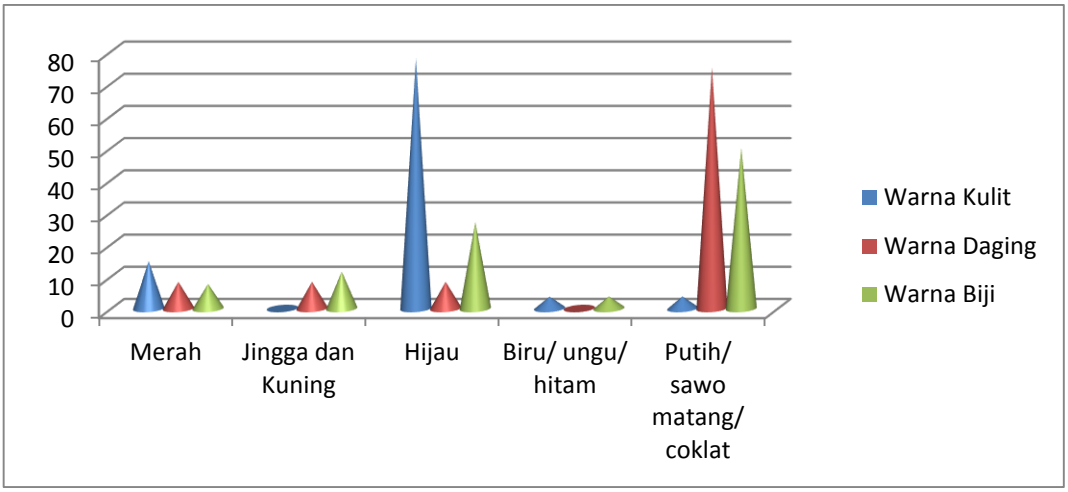
Figure 5. Spectrum of Colors in Jember Local Fruits



Based on the analysis of Figure 5, the local fruit found in Jember has a diversity of skin color or of different meats. The picture above shows that the green color on the skin of the fruit is the contribution of the color most acquired as many as 17 varieties of fruit, including avocado, green grapes, guava, pink crystals, lime, orange Semboro, kedondong, kenitu, cherry, mango, apple melon, watermelon red, yellow watermelons, soursop, sugar apple, breadfruit and banana, while the contribution of the orange in the fruit skin color contribution that little can be found obtained by 3 local fruit species Jember, namely pineapple, papaya, and citrus. Contributions are white / tan / brown in the flesh of the fruit is the contribution of the colors most acquired as many as 16 species of fruit, including Berry, Duku, pink crystals, kedondong, kenitu, cherry, longan, mangosteen, betel nut, rambutan, bark, fruit white dragon, breadfruit, soursop, sugar apple, and brown, while the contribution of the blue / purple / black is the color a little contribution found in Jember local fruit, dragon fruit red.

3.3 Color Vegetable Fruit, Foliage, Flowers and Bulbs

Figure 6. Percentage of Total Color Vegetables Fruits and Tubers by Color Skin, Flesh and Color Seeds



Based on the percentage of fruit and tuber vegetables based on the color of skin, flesh and seed color at most that green and white / tan / brown. Skin color with red color as much as 4 vegetables, orange and yellow as 0, 21 vegetable green, purple 1 vegetable and skin colors of white and brown as much as 1. Color red meat is divided into as many as 1 vegetable, orange and yellow 1, Green 1 , blue / purple / black 0, and most vegetable meat color is white as many as nine vegetables. Seed color red is divided into as many as 2 vegetables, orange and yellow 3, Green 7, the purple one, and most color is white which is about 13 vegetables.

IV. Discussion

The results of the exploration of local fruits and vegetables sold in markets and centers of fruits and vegetables in 31 districts in Jember, found 46 kinds of local fruits and 52 kinds of local vegetables. Local fruits and vegetables have potential as a source of germplasm flora that is able to support the local food needs. Therefore, local fruits and vegetables is one of alternative food sources of qualified providers.

Local fruits and vegetables is a plant that has been known and cultivated society, but not documented / no database on the local fruit and vegetables. Though local fruit has a fresh taste with nutritional content therein. People still prefer imported fruit with different strengths. Need to cultivate a love of fruits and vegetables locally through education. Diversification based on local fruits and vegetables is an alternative that can improve nutrition and can solve the problems of malnutrition and food security. Vitamins and minerals contained in fruits and vegetables are rich in food resources that are beneficial to health, development and growth. Although the needs are relatively few, but the function of vitamins and minerals can hardly be replaced so that insufficient consumption of these substances become essential (Mohammed, 2015). Fruit is one of the agricultural commodities that contributed substantially to the diversity of food and the availability of public nutrition because it contains fiber, vitamins and minerals (Indriani, 2015). Vegetables and fruits are a source of dietary fiber that are easily found in foodstuffs. Food consumption patterns in Indonesia caused a shortage of the consumption of vegetables and fruits in almost all provinces in Indonesia. This causes a shift in the pattern of infectious diseases into degenerative diseases and metabolic (Santoso, 2011).

The world's population by 75% indicating fruit and vegetable consumption as has been recommended by WHO. WHO recommendations for the consumption of fruit and vegetables each day is 5-9 servings (400 grams). In Indonesia, the intake of fruits and vegetables only 2.5 servings (MoH RI, 2014). Around the world, 1.7 million estimated deaths per year are associated with low intake of fruits and vegetables (Miller et al, 2016).

In this study, it was found 46 types of local fruits and 52 kinds of local vegetables spread over 31 districts in Jember. There are 24 types of local fruits and 16 kinds of local vegetables have been cultivated. Found 9 types of local fruit available in more than 20 districts, namely avocado, star fruit, Duku, durian, guava, papaya, banana, rambutan and bark. There are 6 types of local vegetables that are available in more than 12 districts, namely large chilli, cayenne pepper, string beans, cucumber, eggplant and tomatoes. This discovery shows that some markets and centers of the fruit has a diversity of local fruits and vegetables are high.

The study of 18 countries in 5 continents, illustrating that the availability of fruits and vegetables throughout the region is related to feed its population (Miller et al, 2016). The colors of the fruits and vegetables of different colors such as blue, purple, red, green, white and yellow-orange. Each color indicates the presence of certain phytochemical compounds are efficacious for preventing various diseases (Astawan, 2008). Each color contains different phytonutrients, so that optimal health can be realized if the intake of fruits and vegetables of different colors meet the recommended servings. Fruits and vegetables are rich in antioxidant phytonutrients have 64 times more than animal foods (Amagram, 2014). A world population that consumes very little fruit and vegetables, both the number and diversity, potentially lower its phytonutrient intake. Phytonutrients in fruits consist of a variety of colors, including red, green, yellow, orange (orange), blue / purple, and white / brown which serves to determine the benefits in health, communities are encouraged to consume fruits with color varies daily (The Institute for Functional Medicine, 2014). According Astawan (2008) suggest that consuming public at least five food groups everyday color, namely red, white, blue or purple, yellow, and green. Each color indicates the presence of certain phytochemical compounds are efficacious for preventing various diseases.

Diversity fruit found in Jember will contribute to the availability fitonutrient for Jember Regency society. The availability of local fruits are stable for fruits that knows no season. Availability of local vegetables are stable for 16 kinds of vegetables that have been cultivated. What kind of fruit is a fruit typical of that found kenitu, the spreading can be found in the 6 districts, the District Ajung, Gumukmas, Rambipuji, Jombang, Arjasa and Sumbersari. Among local fruit, found 52.2,% sold derived from the cultivation and 30.8% coming from the local vegetable cultivation. Of the 52 types of local vegetables, which are often used in the form of fruit vegetables 23, 23 leaves, 3 flowers and 2 vegetable bulbs. This is consistent with some studies finding that the leaves are part of the vegetables are often consumed (Susanti, 2015; Chotimah et al, 2013).

Database creation of local fruits and vegetables in Jember, for the first time made through this research. Results of research have discovered 46 types of local fruits and 52 kinds of local vegetables can contribute to food security in Jember.

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