PROGRAMME & ABSTRACTS

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Time	Title	Code
1500 - 1520	**Potato and Sweet Potato Processing Industry: Technology Development in China** Prof. Dr. Xie Jiang (Institute of Sichuan Academy of Agricultural Sciences, China)	S4 O1
1520 - 1540	**DSC and Microscopy of fish protein-starch interaction** Prof. Dr. Jamilah Bakar (Universiti Putra Malaysia)	S4 O2
1540 - 1600	**Clustering of Development Area of Fish Processing Industry Using Cluster Analysis: Case Study in Province of Central Java** Prof. Ir. Dr. Giyatmi (Jakarta Sahid University, Indonesia)	S4 O3
1600 - 1620	**Characterization of Human Isolates of Lactic Acid Bacteria for Probiotic Products Development** Ratih Dewanti Hariyadi (Bogor Agricultural University, Indonesia)	S4 O4
1620 - 1640	**Effect of Temperature and Moisture Content on Specific Heat and Enthalpy of Four Types of Meat** Prof. Dr. Hobani, A.I. (College of Food & Agricultural Sciences, Saudi Arabia)	S4 O5
1640 - 1700	**Correlations between The Compositional and Pasting Properties of Various Potato Starches** Assoc. Prof Dr. Nik Norulaini Nik Abd. Rahman (Universiti Sains Malaysia)	S4 O6
1700 - 1720	**Effect of Mechanical Drying on the Quality of Red Chilli (Capsicum annuum. L)** Basavaraj, M. (STJ Institute of Technology, India)	S4 O7
1720 - 1740	**Effect of Konjac Glucomannan on Stability of Frozen Rice Starch Gel** Assoc. Prof. Dr. Sanguasri (Kasetsart University, Thailand)	S4 O8

Clustering of development area of fish processing industry using cluster analysis *(Case study in province of Central Java)*

Giyatmi[1] and Purnomo, A.H[2]

Indonesia as an archipelagic country has the longest coast line, i.e. 81.000 km, with the fishing ground found along the coast. According to that geographycal condition, development planning of marine fish based agroindustry is better to be carried out using area approach, i.e. through setting up development area and detemining developing center in each areas. Technically, clustering model of development area and developing center have the same procedure and methodology. In clustering of development area, input is absolute distance among tested areas with the asumption that condition among areas is similar characteristics. Developing centers are constructed using 11 criterias, i.e. local government regulation and policy, investment level, shortness of raw material sources distance, production cost, social conflict, labour, water and energy source, as well as transportation and communication facilities. Results of verification of model culster showed that Central Java Province having potency to develop marine fish based agroindustry can be grouped into 3 development area, with each developing centres of Pekalongan city, Pati district and Cilacap district respectively.

Keywords : Cluster analysis, fish processing industry, development area

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INTRODUCTION

Central Java Province is one of the provinces in Indonesia, having borders with Java sea in the north, East Java Province in the east, Yogyakarta Province and Indian Ocean in the south, and West Java province in the west. Central Java province has 35 districts/cities, in which 15 districts/cities have marine resources potency, i.e. 13 districts/cities in the north coast and 2 districts in the south coast. .

According to that geographycal condition, development planning of marine fish based agroindustry is bettei to be carried out using area approach, i.e. through setting up development area and detemining developing center in each areas. Similarity in potency and commodity produced in one development area as well as characteristics of marine fish commodity to easily deteriorate was to be considered in clustering an area. Establishment of development area was based on the distance between areas, thus it can make easy in the development of marine fish handling/processing industries. Establishment of development area was expected to make the utilization of facilities more effivient.

METHODS

Establishment of development area and determination of developing center were generated through a computer-base model called as AGRIPAL (Agroindustri Perikanan Laut/Marine Fish Agroindustry). AGRIPAL Model is a generic model which was flexibly designed meaning that the model could be used in other areas.

Technically, clustering model of development area and developing center have the same procedure and methodology. In clustering of development area, input is absolute distance among tested areas with the asumption that condition among areas is similar characteristics. Developing centers are constructed using 11 criterias, i.e. local government regulation and policy, investment level, shortness of raw material sources distance, production cost, social conflict, labour, water and energy source, as well as transportation and communication facilities. Importance level or weight of each criteria was formulated using Minkowski's rule, and then aggregated into euclidean distance form. Euclidean distance matrix was processed using a methodology and exposed with identical outputs (Anderberg, 1973; Kaufman and Rousseeuw, 1990). Assessment for determining development center for each areas was carried out by scoring I - 10 (extremely low – extremely high).

RESULTS

Results showed that Central Java province could be divided into three development area, i.e. two areas in the north coast and one area in the south coast. Development area I consisted of 5 areas, i.e. Brebes District (A1), Tegal District/City (A2), Pemalang District (A3), Pekalongan District/City (A4) and Batang District (A5). Development area II had 6 areas, i.e. Kendal District (A6), Semarang City (A7), Demak District (A8), Jopara District (A9), Pati District (A10) and Rembang District (A11). Development area iii covered 2 areas, i.e. Kebumen District (A12) and Cilacap District (A13) (Figure 1a).

Analysis of developing center showed that those areas were grouped into three catagories, i.e. less potential area (A), potential area (B) and most potential (C). Area A consisted of Brebes District (A1), Tegal District (A2), Pemalang District (A4), Pekalongan District (A5), Batang District (A7), Kendal District (A8), Demak District(A10), Jepara District (A11) and Kebumen District (A14). Area B covered Semarang City (A9) and Cilacap District (A15). Area C included Tegal City (A3), Pekalongan City (A6), Pati District (A12) and Rembang District (A13) (Figure 1b).
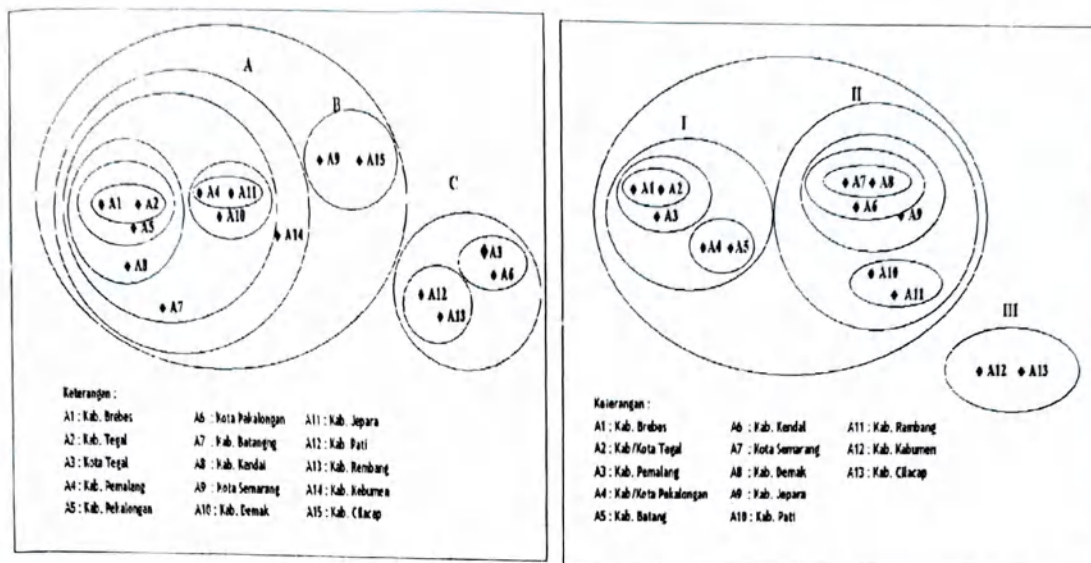
(a)   (b)

Figure 1. Result of grouping analyses of development area and developing center for marine fisheries agroindustry in Central Java Province

DISCUSSION

Production volume of marine fish in Central Java province in 2003 was 236.000 tones. Disposition of fish production for each development areas was , 51,52% for development area I, 43,18% for development area II and 5,21% for development area III. Total production value of marine fish in Central Java province in 2003 was Rp 773,6 billion (Provincial Office of Marine and Fisheries, 2004). Nearly 95% of marine fish catch in Central Java province was from two development areas located in the north Java coast having 68 fish landing place.

Production volume of marine fish in a certain area reflected the availability of raw material for supporting agroindustry activities. Further consideration for determination of developing center for each area was continuous production of marine fish in the same catarogy. Based on that consideration, development area I showed that fisheries produfction in Pekalongan city was higher compared to Tegal city. Development area II had Pati district and Rembang district, but fisheries production volume in Pati district was higher than that of Rembang district. Cilacap district located in development area III indicated thed lowest fisheries production volume. However, economic values of fish landed in Cilacap district were higher compared to those of other districts/cities, such as tuna, skipjack and shrimp. Those three commodities were main export commodities for Cilacap district. In the form of both fresh and processed products. Fish landed in the northern Java coastal was mainly small pelagic fish, such as scad, mackerel, small tuna and sardine having low economic value. Marine fish production volumes of Pekalongan city, Pati district and Cilacap district in 2003 were 26,2%, 26,9% and 3,4% of total production of Central Java province respectively..

Fisheries production in Central Java province during the last 10 years decreased 1.43%. Decreasing performance was demonstrated by Semarang

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city, Pekalongan city, Batang district, Kendal district and Demak district. The possible reason for that decrease was that the boats landing their catch are mainly small size boats with fishing ground in Java sea. Exploitation level in Java sea known has reached over fishing level (Atmadja *et al.*, 2003). Shalowing process in the river mouth and fish landing destruction contributed in the difficulty in fish landing process.

CONCLUSION

Based on the both above analyses, development of marine fish agroindustry in Central Java could be divided into following group, i.e. development area I consisted of Tegal district/city, Pekalongan district/city, Brebes district, Pemalang distrct, and Batang district with Pekalongan city as a developing center. Development area II consisted of Kendal district, Demak district, Jepara district, Pati district, Rembang district and Semarang city with Pati district as a developing center. Cilacap district was a developing center for development area III consisting of Kebumen dan Cilacap districts.

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