

Supply and Demand Trend of Tropical Fruits in Indonesia



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Indonesia – Tropical Country of Asia –



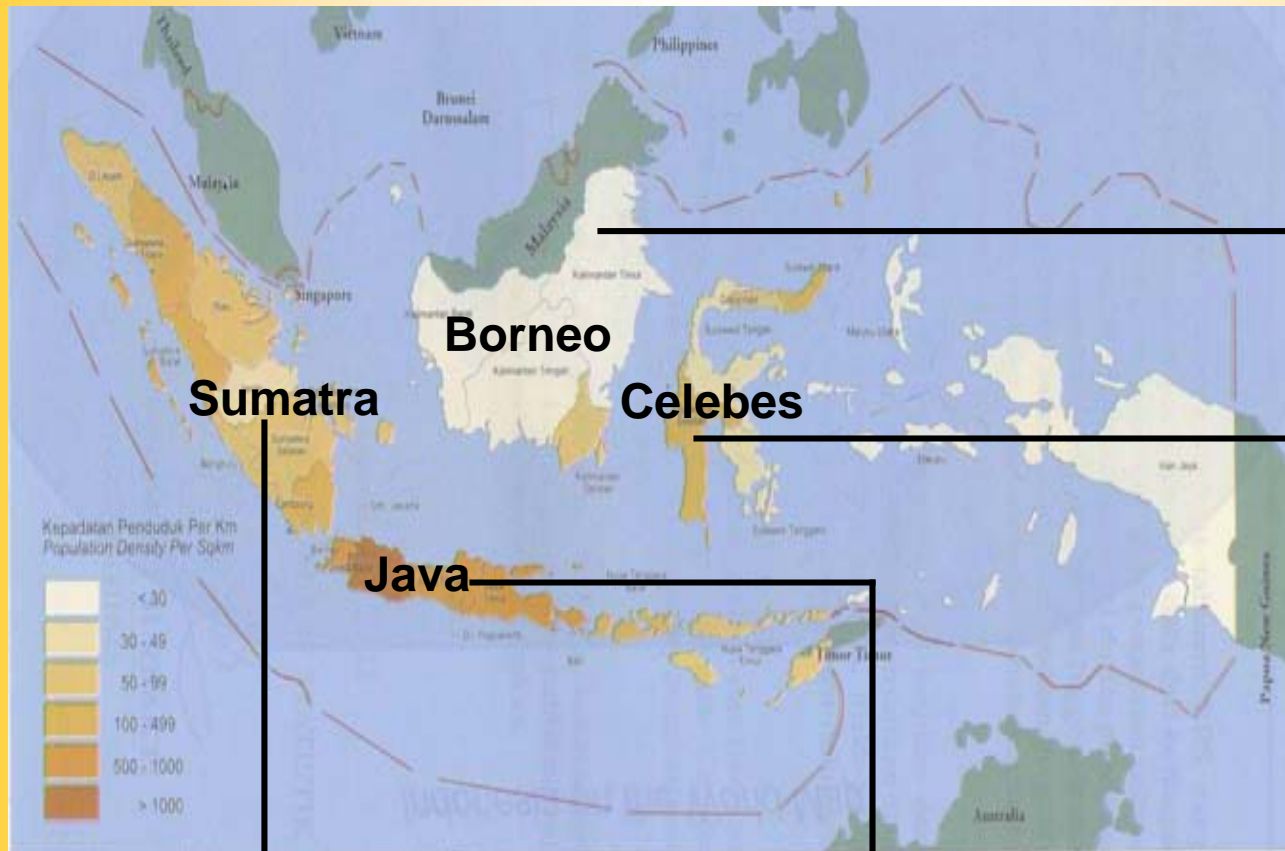
Lying astride the equator in South East Asia Region, Indonesia is one of the tropical countries with wide biological diversity

Archipelagoes



- ✓ Numerous edible fruit species are found over the archipelagoes, offering wide variation of nutritional quality, taste, flavor and seasonal availability.
- ✓ Some of fruit species have become commercial, but have not been explored optimally.
- ✓ Recently, market potential of tropical fruits, both for foreign as well as domestic market, increased significantly due to population growth, better living condition, and promotion of international tourism

Main Fruit Production Area



Borneo :
South Borneo
W. Borneo

Celebes :
N. Celebes,
C. Celebes,
S. Celebes

Sumatra:
Aceh, N. Sumatra, W. Sumatra,
Riau, Jambi, Lampung, S.
Sumatra

Java :
Jakarta, W. Java, C.
Java, E. Java, Banten

Fruits Production

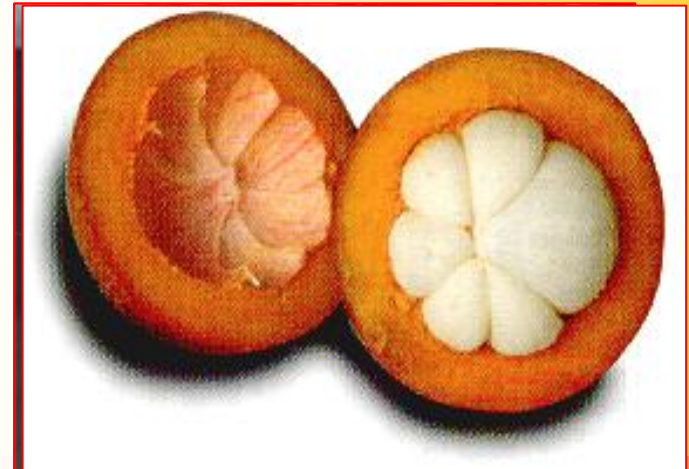
- The total fruit production of 2001-2005 periods ranged from 9.96 to 14.79 million tons/years, fruits production will increase to be 17.83 million tons in 2009.
- The most fruit produced in Indonesia so far has been banana and next came citrus, mangoes, salacca fruits, and pineapples.
- In 2005, the bananas production reached 5 million tons,
 - which of citrus was more than 2 million tons,
 - mangoes was more than 1 million tons,
 - while that of other fruits was below 1 million tons.
- Fruits having production between 500 thousand – 1 million tons/year were salacca fruits, pineapples, jack fruits, rambutan, durian, and papayas;
- those produced between 100-500 thousand tons/year were water melons, avocados, duku, guavas, and rose apples.
- Mangosteen, star fruits, sapodillas, soursops, breadfruits, watermelons, and other minor fruits were produced less than 100 thousand tons/year.

The Most Fruit Produce in Indonesia

Comodities	Production (ton)				
	2001	2002	2003	2004	2005
Bananas	4.300.422	4.384.384	4.177.155	4.874.439	5.177.608
Citrus	691.433	968.132	1.529.824	2.071.084	2.214.020
Mangoes	923.294	1.402.906	1.526.474	1.437.665	1.412.884
Salacca Fruits	681.255	768.015	928.613	800.975	937.931
Pineapples	494.968	555.588	677.089	709.918	925.082
Jack fruits	415.079	536.186	694.654	710.795	712.693
Rambutan	350.875	476.941	815.438	709.857	675.578
Durian	347.118	525.064	741.831	675.902	566.205
Papayas	500.571	605.194	626.745	732.611	548.657
Water melons	240.298	266.904	455.464	410.195	366.702
Avocados	141.703	238.182	255.957	221.774	227.577
Duku	113.071	208.350	232.814	146.067	163.389
Guavas	137.598	162.120	239.108	210.320	178.509
Rose Apples	73.302	97.296	115.210	117.576	110.704
Mangosteen	25.812	62.055	79.073	62.117	64.711
Others	522.233	406.200	455.986	457.161	504.349
Total	9.959.032	11.663.517	13.551.435	14.348.456	14.786.599

Competitiveness of Indonesian Fruits

- ❖ **Indonesia is not yet categorized into a major exporter of fruits.**
- ❖ **Domestic demand on fruits is still a limiting factor in export.**
- ❖ **In spite of some existing problems faced, agribusiness in Indonesian fruits has strong competitiveness potential with regard to:**
 - 😊 **Species and varieties which are very specific**
 - 😊 **Different harvesting season from those of other countries**
 - 😊 **Relatively low selling price**
 - 😊 **Mostly organic**



Species & Varieties

☒ Indonesia has several specific fruit species which have been cultivated well and have very good potential for development.

☺ Indonesian salacca fruits is the best in the world, much better than that of other tropical countries.

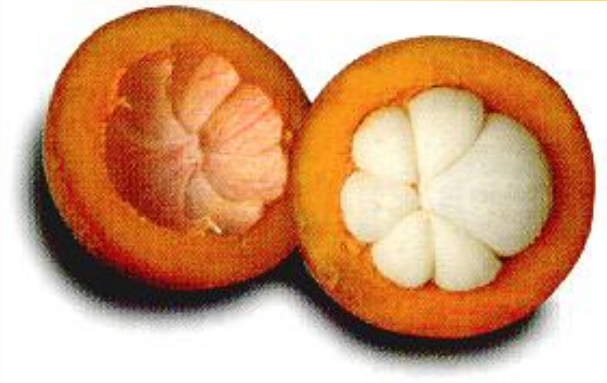
♪ Salacca fruits 'Pondoh' has low tannins content, thus it does not taste astringent though unripe;

♪ 'Gula Batu' salacca fruits from Bali has a very sweet taste and 'Sidempuan' Salacca fruits from North Sumatra is big with reddish flesh.



Mangosteen

- Although mangosteen has not been cultivated intensively in Indonesia, it has been a favorite fruit among international communities.
- World's demand on mangosteen cannot be met by Indonesia and Thailand.



Mangoes

❖ The varieties of mangoes in Indonesia has been considerably high, but two superior varieties,

❖ ‘Arumanis’ and ‘Gedong Gincu’ are recommended to be developed.

😊 ‘Arumanis’ variety has a very sophisticated taste despite its green peel.

😊 ‘Gedong Gincu’ variety, however, has an interesting peel color, nice aroma and taste.



Rambutan

☒ Indonesia also has a superior rambutan variety, 'Binjai'.

☒ The other popular varieties are:

😊 Garuda

😊 Rapih

😊 Lebak Bulus



Garuda



Binjai



Rapih



Lebak Bulus

Durian

- ✿ Indonesian durian usually has a stronger taste than that of 'Monthong'.
- ✿ True durian lovers would choose 'Petruk', 'Sunan', 'Sitokong' or 'Tembaga' durian because of its strong aroma and taste.



Bananas & Duku

- There are also superior varieties of bananas in Indonesia, which have won an International Banana Contest in Thailand: those of 'Raja Bulu' and 'Tanduk'.
- Duku 'Palembang' from South Sumatra is one of the best duku in Indonesia.



Papaya



Pineapple



Banana

Harvesting Season

- **Other tropical fruit producers in Asia are Thailand, the Philippines, Malaysia, and Vietnam, being in the northern part of the continent and having different wet season from Indonesia.**
- **Flower induction and then fruit harvesting season are highly dependent on changes in season.**
- **Due to difference in the beginning of rainy season between Indonesia and the countries mentioned above, fruiting season among most fruits is also different.**
- **This is a favorable condition as market demand on tropical fruits can be met all year round by the related exporting countries by turns.**

Constrains and Problems

☼ **Tropical fruits industry in Indonesia started to develop faster in 1980's though still have several constrain:**

- ☺ Limited business scale for fruit orchard
- ☺ Less intensive cultivation
- ☺ Limited superior varieties
- ☺ Less developed technology
- ☺ Weakness in the information system
- ☺ Low production
- ☺ Limited cargo for export
- ☺ Limited human resources



Constrains & Problems

 **Fruit export from Indonesia has been very low as there are only few private enterprises which have a serious interest in fruit orchard development:**

- ☺ **Big orchards available (in a limited number) are of seasonal fruits, pineapples and bananas. PT Great Giant Pineapple in Lampung Province has an area of 32.000 ha, PT Nusantara Tropical Fruit Industry has an area of 2000 hectares in Lampung Province, 800 hectares of which is used for bananas plantation.**
- ☺ **As far as annual fruit trees are concerned, so far there have only been mangoes, oranges, durian, rambutan, star fruits, guavas, and salacca fruits cultivated in an agribusiness manner in a relatively wide extent of land.**
- ☺ **There is not yet any company that extensively cultivates other annual fruit trees such as mangosteen, duku, rose apples, jack fruits and many others.**

Constrains & Problems

- ❖ **The majority of fruit producers are small holder farmers, operating on land less than one hectare, and home-yard.**
- ❖ **In this small holder farmer's fruit orchards and the home-yard, there are several constraints and problems arising. They include those of :**
 - 😊 **Product standardization**
 - 😊 **Quality and quality assurance**
 - 😊 **Implementation of good cultivation practices**
 - 😊 **Post-harvest handling**
 - 😊 **Continuity of supplies**



Quality & Product Standardization

- **Currently Indonesia already has a national quality standard for several horticulture commodities, but it so far has only been implemented in export commodities of horticulture.**
- **This quality standard has not yet been applied in commodities sold in domestic market.**
- **Fruits sold in supermarkets are subject to a standard set by any related supermarket itself.**
- **Applying a quality standard nationally helps increase the quality of commodities available in market and thus satisfies consumers, but this will be hard on the farmers' side as with production systems practiced so far, there is no guarantee for commodities produced to reach a particular level of quality.**

Food Safety, Sanitary, and Phytosanitary

- ❖ In term of food safety, some species of Indonesian fruits are considered safe.
- ❖ There are a lot of fruit produced without application of pesticide and thus there will be no pesticide residue found in them.



Good Agriculture Practice (GAP)

- ❖ There has been a guideline for implementing Good Agriculture Practices (GAP) and Standard Operation Procedures (SOP) for various existing fruit commodities prepared either by local community, universities, research centers, or by Directorate General of Horticulture.
- ❖ However, most farmers have not applied or implemented this GAP yet.



Problems in Fruit Orchard Investment

- ❁ There are a few things to be taken into consideration in increasing fruit production in Indonesia, which are among others:
- ☺ Investors being reluctant in investing in fruit orchards;
 - ☺ Difficulties in finding areas of land highly suitable for fruit growing as what is available has not been allocated for that purpose;
 - ☺ Very little technology used in orchards cultivated by small holder farmers that results in low production and quality of fruit;
 - ☺ Very little incentive encouraging investment in agriculture such as:
 - ♪ supply of capital
 - ♪ irrigation facilities
 - ♪ infrastructures
 - ♪ fiscal policies
 - ♪ international trading



Fruits Export

- Indonesia was a considerably exporter of bananas (ranging from 70-101 thousand tons/year), but in 2001 export of bananas declined drastically to only 293 tons as a result of *Fusarium* wilt disease. The bananas export increased again in 2005 to be 3.6 thousand tons.
- The export volume of mangosteen has been increasing consistently since 1997. In 2005, the export volume of mangosteen came to 8.5 thousand tons.
- The export volume of fresh citrus reached 1.2 thousand tons making it takes the third position in export volume.
- Those of mangoes, rambutan, melons and water melons were between 300 tons to 1,500 tons,
- while that of papayas and durian were less than 100 tons.
- Pineapples have been exported both fresh and canned. The export volume of canned pineapples from Indonesia has come close to 200 thousand tons, the third biggest in the world

Fresh and Canned Fruits Export from Indonesia 2001-2005

Commodities	Volume (kg)				
	2001	2002	2003	2004	2005
Mangosteen	4.868.528	6.512.423	9.304.511	3.045.379	8.472.770
Bananas	293.715	512.569	244.732	1.197.495	3.647.027
Citrus	1.919.703	1.796.061	1.403.781	2.046.221	1.248.559
Mangoes	424.917	1.574.836	584.500	1.879.664	964.294
Pineapples	2.020.442	3.734.414	2.284.432	2.431.263	643.716
Melon & Watermelon	399.458	487.031	282.300	307.976	321.445
Rambutan	202.934	362.637	603.612	134.772	-
Papayas	4.934	3.287	187.972	524.686	60.485
Avocados	13.734	84.828	169.049	5.416	5.121
Guavas	-	32.052	76.488	106.274	15.277
Duku	-	16.921	21.044	1.643	-
Durian	2.602	89.463	13.707	1.494	2.911
Salacca Fruits	474.347	846.442	-	-	-
Canned Pineapples	156.741.709	177.360.782	145.768.692	167.324.764	197.975.248

Fruits Import

- **The volume of imported fruits in Indonesia keeps increasing, it decreased at the beginning of 1998's monetary crisis, but it increased again in the following year becoming even higher in 2005.**
- **Fruits that have been imported the most are those of temperate and subtropical climate comprising apples, citrus, pears, grapes, dates, longans and lychees.**
- **Durian has been imported from Thailand since 1997.**
- **Indonesia has also imported small amount of certain tropical fruits including mangoes, melons, and pineapples; and also kiwi fruits**

Fresh Fruit Import to Indonesia 2001-2005

Commodities	Volume (kg)				
	2001	2002	2003	2004	2005
Apples	83.227.620	85.056.682	72.244.642	115.314.290	126.972.770
Citrus	75.622.339	76.650.280	59.534.727	95.744.709	93.430.399
Pears	41.614.193	43.577.212	32.738.462	74.310.097	80.395.063
Grapes	11.377.741	16.218.263	16.263.778	38.735.805	25.330.279
Dates	8.823.051	10.269.010	10.106.381	10.623.575	11.524.549
Longans	-	-	-	-	38.640.711
Lychees	-	-	-	-	2.039.569
Durian	3.779.662	7.266.934	3.098.939	11.086.846	11.351.425
Mangoes	267.180	314.029	447.812	688.737	868.692

Fruits Consumption

❏ Due to economic crisis in the year of 1997/1998:

☺ average fruits consumption per capita in Indonesia decreased from 29,9 kg/capita/year in 1990

☺ became 18,7 kg/capita/year in 1999,

☺ but increased again to be 29,4 kg/capita/year in 2002 and

☺ 31,6 kg/capita/year in 2005

❏ The consumption will also increase steadily to be ;

☺ 32,4; 34,8; 36,5; and 38,4 kg/capita/year respectively in the year of 2006 to 2009



Consumption in 2005

- Population: 225 millions people
- Fruit consumption/capita: 31,56 kg/year
- Total consumption: 7,10 million tons**
- Production: 14,79 million tons
- Available: 8,87 million tons (loss 40%)**
- Import: 413 thousand tons (5,82% to national consumption)
- Export: 272 thousand tons



Fruits Consumption

❀ The major fruits consumed by Indonesian are

- 😊 banana,
- 😊 rambutan,
- 😊 citrus,
- 😊 papayas,
- 😊 duku,
- 😊 durian,
- 😊 salacca fruits,
- 😊 and mangoes.



❀ Among those fruits,

- 😊 banana is the largest; however the growth rate in consumption from 1990 to 2005 showed a negative rate.
- 😊 The consumption growth rate of papayas and pineapples was also decreased.
- 😊 The highest positive growth rate was shown by citrus, followed by duku, durian, water melon and salacca fruits

Fruit Consumption						
Fruits	Consumption per Capita (kg/year)					
	1990	1993	1996	1999	2002	2005
Bananas	13,83	12,58	9,05	8,27	7,80	7,85
Rambutan	4,78	3,48	2,44	1,98	3,44	4,37
Citrus	0,88	0,94	1,30	1,20	1,98	2,60
Papayas	3,12	3,02	2,86	3,12	2,24	2,29
Duku	1,14	0,16	0,16	0,05	1,82	2,29
Durian	1,25	0,52	0,52	0,16	0,94	1,61
Salacca fruits	0,42	0,62	0,20	0,73	0,94	1,20
Water Melons	0,31	0,47	0,78	0,47	0,83	0,99
Mangoes	0,42	0,52	2,13	0,26	0,31	0,62
Apples	0,10	0,21	0,68	0,16	0,62	0,62
Pineapples	1,09	1,04	0,94	0,68	0,47	0,57
Avocado	0,26	0,16	0,21	0,26	0,26	0,47
Jack Fruits	0,99	0,88	0,99	0,42	0,47	0,42
Rose Apples	0,62	0,62	0,31	0,26	0,26	0,21
Melon	-	-	0,16	0,05	0,31	0,16
Others	0,69		1,97	0.63	6.71	5.33
Total	29,9	21,0	24,7	18,7	29,4	31,6

Share of Fruits Expenditure to Total Expenditure

- Share of fruits expenditure to total expenditures decreased from 2,84 in 2002 to be 2,10 in 2006.
- The highest share was in 2003 that is 2,97%. The share is relatively very low compared to developed countries.
- Expenditure for fruits of urban households is slightly higher than the rural ones.
- There is a positive relationship between income and household expenditure for fruits. The higher household income, more expenditure for fruits.



Share of Fruits Expenditure to Total Expenditure

	2002	2003	2004	2004	2006
Indonesia	2,84	2,97	2,61	2,76	2,10
Rural	2,80	3,04	2,64	3,00	2,10
Urban	2,87	2,92	2,59	2,60	2,04

Income					
Low	2,12	2,34	1,55	1,81	1,48
Medium	2,76	2,84	2,53	2,64	1,89
High	3,07	3,15	2,67	2,79	2,23

Fruit Consumption and Share of Individual Fruit Expenditures to Total Fruit Expenditures in Java Island

- ❖ Citrus and banana has the highest per capita consumption. This is due to the availability of both fruits in every place in Indonesia along the year.
- ❖ However there are some interesting differences of consumption pattern among the fruits:
 - 😊 The citrus, papaya and watermelon consumptions are higher in urban rather than in rural area.
 - 😊 However banana and salacca fruits consumption is higher in rural compared to urban area. This may be due to the fact that banana and salacca fruits consumption is from own production in rural area



The Consumption Pattern between Income Strata

- The consumption pattern also differs between income strata among the fruits
- The citrus, watermelon and papaya consumption shows a very significant difference between low, middle and high income group:
 - ☺ Part of citrus are imported from tropical and sub-tropical countries. The citrus price is relatively cheap for citrus from China, but relatively high for citrus from Australia, Thailand and other countries. The high level income group will consume more imported citrus compared to low income one.
- Banana consumption is relatively the same between income groups:
 - ☺ Many kinds of banana are available in rural and urban areas where prices vary from the very cheap to relative high prices in both traditional and modern markets.

Fruit Consumption and Share of Individual Fruit Expenditures to Total Fruit Expenditures in Java Island

	Java Island	Rural	Urban	Income		
				Low	Middle	High
Consumption (kg/cap/year)						
Citrus	2,05	1,40	2,46	0,67	1,84	3,78
Banana	2,43	3,13	1,94	2,03	2,70	2,87
Papaya	1,18	0,72	1,48	0,66	1,13	2,04
Salacca fruits	0,25	0,39	0,31	0,13	0,39	0,57
Water Melon	0,54	0,50	0,64	0,22	0,65	1,31

Share to Total Fruits Expenditure						
Citrus	0,387	0,334	0,417	0,291	0,389	0,398
Banana	0,264	0,404	0,195	0,451	0,292	0,166
Papaya	0,098	0,069	0,112	0,116	0,099	0,092
Salacca fruits	0,038	0,067	0,046	0,043	0,067	0,046
Water Melon	0,040	0,044	0,044	0,039	0,055	0,050

Price and Expenditures Elasticity

✿ From own price elasticity indicators,

😊 the demand for fruits is generally inelastic; for citrus, banana and papaya; for all income and education strata.

♪ This means that if there is a change in one percent of fruit price, the fruit consumption will change less than one percent

✿ Expenditure elasticity:

😊 citrus and papayas are generally inelastic in rural and urban area and in all income and education strata

😊 However banana is generally elastic for all criteria

♪ This finding means that household demand for banana is relative sensitive to change in price. This may be due to the fact that banana elasticity is higher because it is available from home production, and several kinds of banana are sold in cheap price.

Price and Expenditures Elasticity of Citrus, Banana, and Papayas

	Price Elasticity			Expenditure Elasticity		
	Citrus	Banana	Papaya	Citrus	Banana	Papaya
Java Island	-0,8156	-0,8059	-0,6829	0,9352	1,1174	0,9486
Rural	-0,7830	-0,8008	-0,5855	0,8694	1,1355	1,0253
Urban	-0,8279	-0,8091	-0,7332	0,9608	1,1001	0,9335
Income						
Low	-0,8176	-0,8467	-0,959	0,9329	1,0757	1,0059
Medium	-0,8057	-0,7842	-0,925	0,9568	1,1064	0,9299
High	-0,8312	-0,7506	-0,819	1,0280	1,1302	0,7449
Education						
Low	-0,7992	-0,8080	-0,9394	0,9200	1,1417	0,9389
Medium	-0,7840	-0,7718	-0,9402	0,8865	1,1029	1,0733
High	-0,9249	-0,7680	-0,7916	1,0314	1,0189	0,9033

4th International Symposium on Tropical and Subtropical Fruits

 it is my pleasure to invite you to attend

4th International Symposium on Tropical and Subtropical Fruits

 That will be held in **November 3-7, 2008 in Bogor, Indonesia**



Thank You