

FARMER PERCEPTION AND ACCEPTANCE ON AGRICULTURAL BIOTECHNOLOGY



Ir. Winarno Tohir
Ketua Umum KTNA Nasional

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KTNA Organization Profile

- KTNA (Kontak Tani Nelayan Andalan) or NOFA (National Outstanding Farmers and Fishermen Association) is a professional socio-economic and independent organization based on the foundational philosophy of Indonesia Pancasila and the 1945 Constitution and its amendments, which focus on social activities in agribusiness-based agriculture and rural environments.
- KTNA consisted of farmers and fishermen communities in their respective areas, who are relied on with pioneering and patriotic characteristics in national economic development, especially in the field of agribusiness.

KTNA Farmer Capacity Building on Biotechnology

- Since 1999 series of Capacity Building on Agricultural Biotechnology for Farmer Welfare Improvement has been carried out by KTNA in various Provinces throughout Indonesia, with an objective for farmers to understand correctly and to improve knowledge of Agricultural Biotechnology.

Food is Life

- Food is the life or death of a nation.
- Food is a primary need to sustain life for millions of the world's population.
- The availability of world food is closely related to the growth of the world population. Malthus (1798) predicted that the world would face the threat of inability to meet the food needs of its population. Food shortages will trigger a humanitarian problem that leads to a multidimensional crisis.
- In 2009 FAO quoted that since the 1970's, there were around 1.02 billion people in the world suffering from hunger and food shortages, especially in African and South Asian countries.

Food vs. Population

- The UN Population Fund (2000) predicts that by 2050 the world's population will increase by around 2.32 billion people (with a population of 9.3 billion). The increase in the world population is around 2% per year while resources are decreasing.
- In 2009 FAO quoted that since the 1970's, there were around 1.02 billion people in the world suffering from hunger and food shortages, especially in African and South Asian countries.

Food Production Challenges

1. There is a disruption of Extreme Predicted Anomalies (El-Nino and La-Nina) which will reduce food productivity. See *Table 1* (The Real Impact of Climate Change on Strategic Food Production in 2050).
2. Land Function Conversion that mostly occurs, especially in Java as a fertile area even though there is already a Sustainable Food Land Law. Infertile land (marginal) that exists outside of Java with less optimal productivity (Tidal and Swamp Land, and Dry Land) which requires technological breakthroughs.
3. Increased Population that is difficult to press. See *Table 2* (Growth of the World Population in 1950-1990 with Projections until 2030).

Food Production Challenges

4. Increased demand for food consumption due to an increase in population is difficult to predict. *See Table 3* (Comparison between Rice Production and Consumption in Asia and America).

Potential of Swamp Area in Indonesia

- Swamp land is one of the agrosystems that has a region between dry land (terrestrial) upstream and deep water land in the downstream. This condition allows large and diverse niches for plants and plants to develop.
- Swamp land is spread across parts of Sumatra, Kalimantan and Papua, of which around 11.11 million ha are categorized as potential as productive agricultural land.
- Swamp land area in Indonesia reaches 33.43 million ha, divided into tidal swamps covering 20.13 million ha and swamp swamp area of 13.28 million ha. Based on the type of swamp land consists of mineral soil around 18.56 million ha and gambur soil 14.87 million ha (BBSDLP 2014).

Table 1: The Impact of Climate Change on Strategic Food Production in 2050

Crops	Production in 2006 (ton)	Declining Food Production by 2050	
		(ton)	(%)
Padi Sawah	51.647.490	10.473.764	20,3
Padi Ladang	2.807.477	761.522	27,1
Jagung	11.609.463	1.574.966	13,6
Kedelai	747.611	92.503	12,4
Tebu	1.279.070	97.453	7,6

Source: Handoko et al. (2008)

Table 2. World population growth in 1950-1990 with projections until 2030

Country	Population (Million)			Incremental from 1990- 2030
	1950	1990	2030	
Jerman	68	80	81	1
Prancis	42	57	62	5
Italia	47	58	56	-2
Inggris	50	58	60	2
Jepang	84	124	123	-1
Amerika Serikat	152	250	345	95
China	563	1134	1624	490
India	369	853	1443	590
Indonesia	83	189	307	118

Source : Prof. Drs. Suranto, M.Sc.Ph.

Table 3. Comparison between Consumption Production of Cereals in Asia and America

In Million Tonnes

Country	1950		1990		2030	
	Prod	Con	Prod	Con	Prod	Con
Amerika Serikat	133	121	290	214	377	295
Cina	109	109	329	335	263	479
India	57	55	48	158	222	267
Pakistan	6	6	19	20	28	54
Indonesia	12	12	34	37	48	60
Mesir	4	5	11	19	18	39

Source : Prof. Drs. Suranto, M.Sc.Ph.

KTNA Positioning Statement on Agricultural Biotechnology

1. Biotechnology provides an opportunity to make changes, currently agriculture in Indonesia faces various challenges, such as land conversion, declining land quality, reduced water availability and increasing pest population and extreme climate change that greatly affects productivity.
2. Biotechnology is one of the strategic steps that can be taken to achieve sustainable agriculture in Indonesia to go to Indonesia to become The World's Food Barn in 2045.
3. KTNA farmers are ready to adopt Biotechnology to support and strengthen National Food security and improve the welfare of farmers and their families in Indonesia.

THANK YOU

