AGRO-ECOLOGY
PERTANIAN EKOLOGI – SATU ALTERNATIF

Haji Annuar Yahya
Pengarah Urusan
Felcra Training & Consultancy Sdn Bhd.
dan
En. Ahmad Jatika Nusantara Organic SRI Centre(NOSC)

PERBINCANGAN

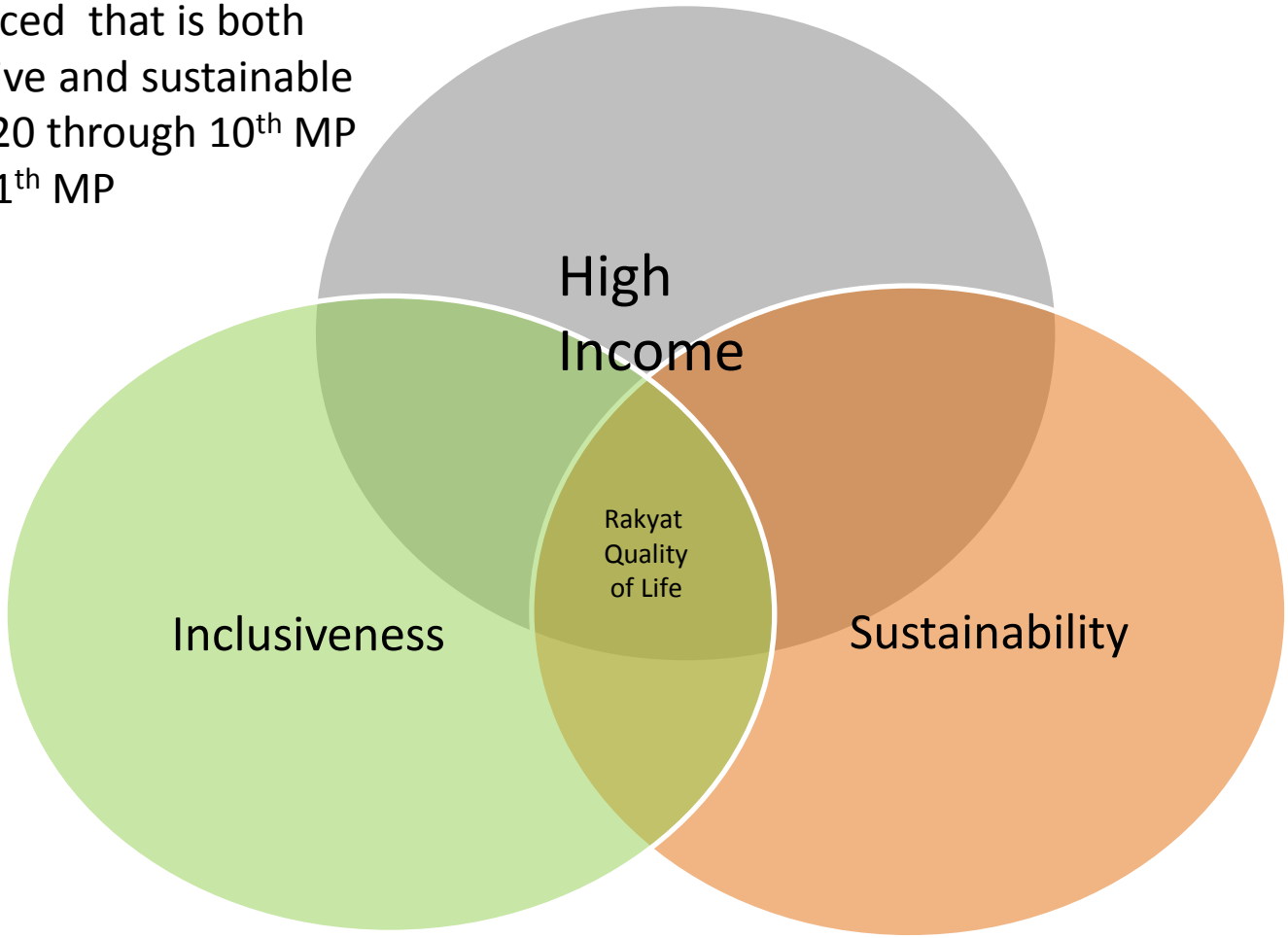
Wawasan 2020 melalui Pelaksanaan
Rancangan Malaysia 10 dan RMK

Sektor Pertanian dalam RMK 10

REVOLUSI TECHnECOLOGY – 5 Bentuk

Bagaimana Systematic Rice Intensification(SRI)
Boleh Menjadi satu Alternatif

Becoming high income advanced that is both inclusive and sustainable by 2020 through 10th MP and 11th MP

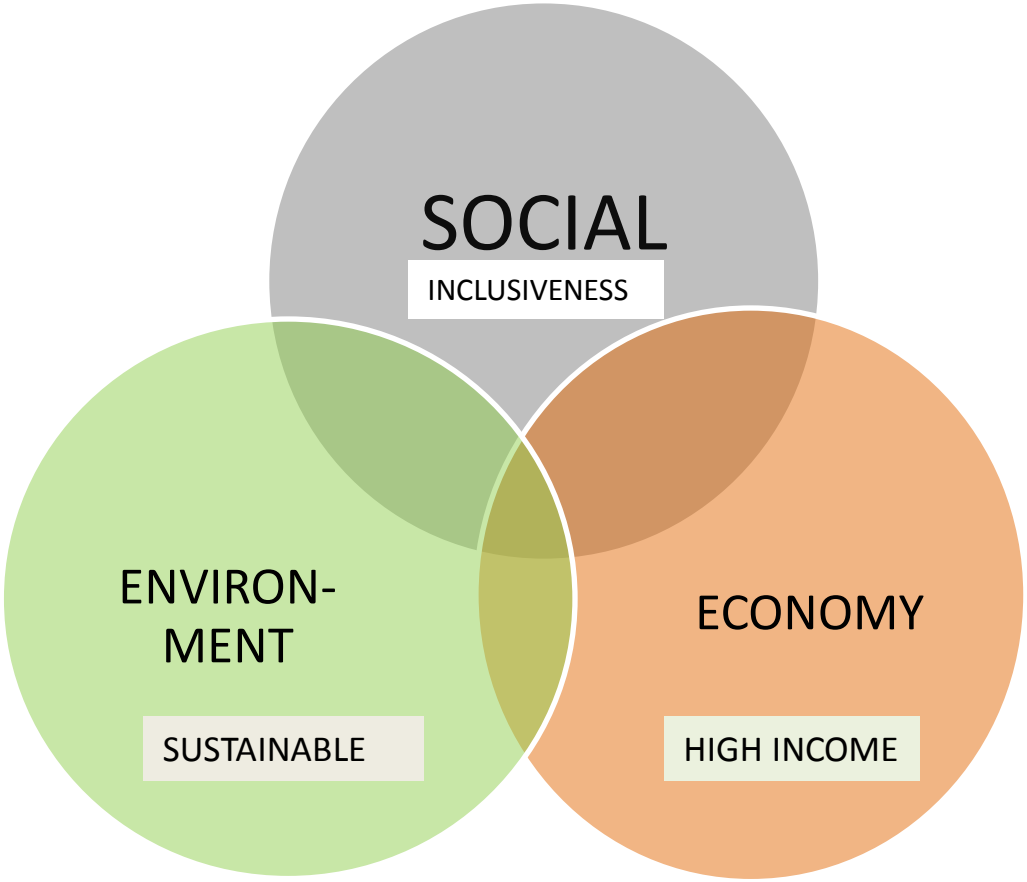


Becoming high income advanced that is both inclusive and sustainable by 2020

Definitions and Measures

- High Income threshold at a per capita income of about RM48,000 0r USD 15,000 in 2020
- Inclusive in nature, enabling all Malaysians to share the benefit.
- Must be sustainable in both economic and environmental terms, meeting present needs without compromising those of future generations.

MALAYSIA 2020 GOALS



DASAR PERTANIAN NEGARA

DPN 1

(1984 – 1991)

Memaksimumkan pulangan pertanian melalui penggunaan sumber secara berkesan serta meransang sumbangan kepada ekonomi

DPN 2

(1992 -1997)

Memaksimumkan pendapatan melalui penggunaan sumber secara optimum dan mampan.

DPN 3

(1998 – 2010)

Meningkatkan pendapatan melalui penggunaan sumber secara optimum.

Meningkatkan jaminan makanan, produktiviti dan daya saing.

Membangunkan sumber baru dan pertanian mampan.

DPN 4

(2011 – 2020)

DASAR AGRO - MAKANAN

OBJEKTIF DASAR AGRO-MAKANAN

Menjamin bekalan makanan mencukupi, berkualiti, selamat dimakan dan harga berpatutan.

Meningkatkan pendapatan pengusaha.

Meningkatkan eksport bagi produk-produk terpilih.

HALATUJU STRATEGIK DASAR AGRO-MAKANAN

- Meningkatkan pengeluaran, produktiviti dan daya saing
- Menggalakkan penglibatan pihak swasta
- Memperkukuhkan rantaian bekalan makanan
- Mempergiatkan R&D dan inovasi
- Menggalakkan pemakanan untuk kesihatan
- Membangunkan sumber manusia mahir dan berpengetahuan
- Mengamalkan pertanian mampan
- Memperkukuh sistem penyampaian

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Agriculture Sector in Economic Transformation Programme(ETP)

- 16 entry point projects (EPPs) fall under 4 themes:
  - Capitalising on Malaysia's competitive advantages.
  - Tapping Premium Markets
  - Ensuring food security objectives are consistent with increasing GNI
  - Expanding participation in the regional supply chain

Ensuring food security objectives are consistent with increasing GNI

- To ensure that food security objectives are met as Malaysia's population continuess to grow, the need of scaling up and increasing agro-food production, such as paddy farming, to *increase national self sufficiency and reduce subsidy dependency by both farmers and end consumers*.

- 4 EPPs identified

  - EPP 10: Scaling up and strengthening productivity of paddy farming in the Muda area.
  - EPP11: Scaling up and strengthening productivity of paddy farming in other irrigated areas
  - EPP 12: Strengthening current anchor companies in cattle feedlots; and
  - EPP 13: Partnering with a large foreign dairy company to establish dairy clusters in Malaysia

IN THE NEWS- New Straits Times June 28 2011

BID TO BOOST OUTPUT OF 'CROPS OF THE FUTURE

- A Food research to combat poverty and hunger will be opened at the end of next month.
- "The first of its kind the Crops For The Future Research Centre (CFFRC) will look into which under - utilised crops available in the future. At the centre's launch yesterday, Prime minister Datuk Deri Najib Razak said such research centre's to promote under - utilised crops were needed because of the precarious global food security situation caused by hike in food prices and extreme weather."
- "The sad truth is, more than 850 million people go to bed hungry everyday. United Nations update show that hunger has spiked as a result of global food and financial crisis."
- Najib said that the Millennium Development Goals pledged to cut poverty by 2015 but the UN Food and Agriculture Organisation projected a 1.7 to 2.6 per cent decline in global food production growth this year.
- "To increase food production and to end extreme hunger, we are going to need bold leadership, clear-headed policies and strong international institutions."

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IN THE NEWS- New Straits Times

BID TO BOOST OUTPUT OF CROPS OF THE FUTURE

- "That is why under the 10th Malaysia Plan, the government will leapfrog into the agriculture sector through innovation in production, disease control and quality control, including developing high value- added products."
- CFRRC chairman Datuk Zainal Abidin Ahmad said the center would take about six months to decide which crops to conduct research on.
- "We will have a consultative process, possibly with Manila and Jakarta".
- He said the government would provide RM113 million, of which RM67 million will be used for research.
- "In the seventh year, we will be self-sustainable through income generating research projects. Our profits will be invested in the research.

  - New Straits Times – Prime News Tuesday June 28, 2011

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IN THE NEWS

- BIOTECH INDUSTRY SET TO TRANSFORM ECONOMY.
  - New Straits Time – Tuesday 28th June 2011

Definition of Technology

- Technology is a set of tools, techniques,and knowledge that can be used in combination or separately to solve problems.

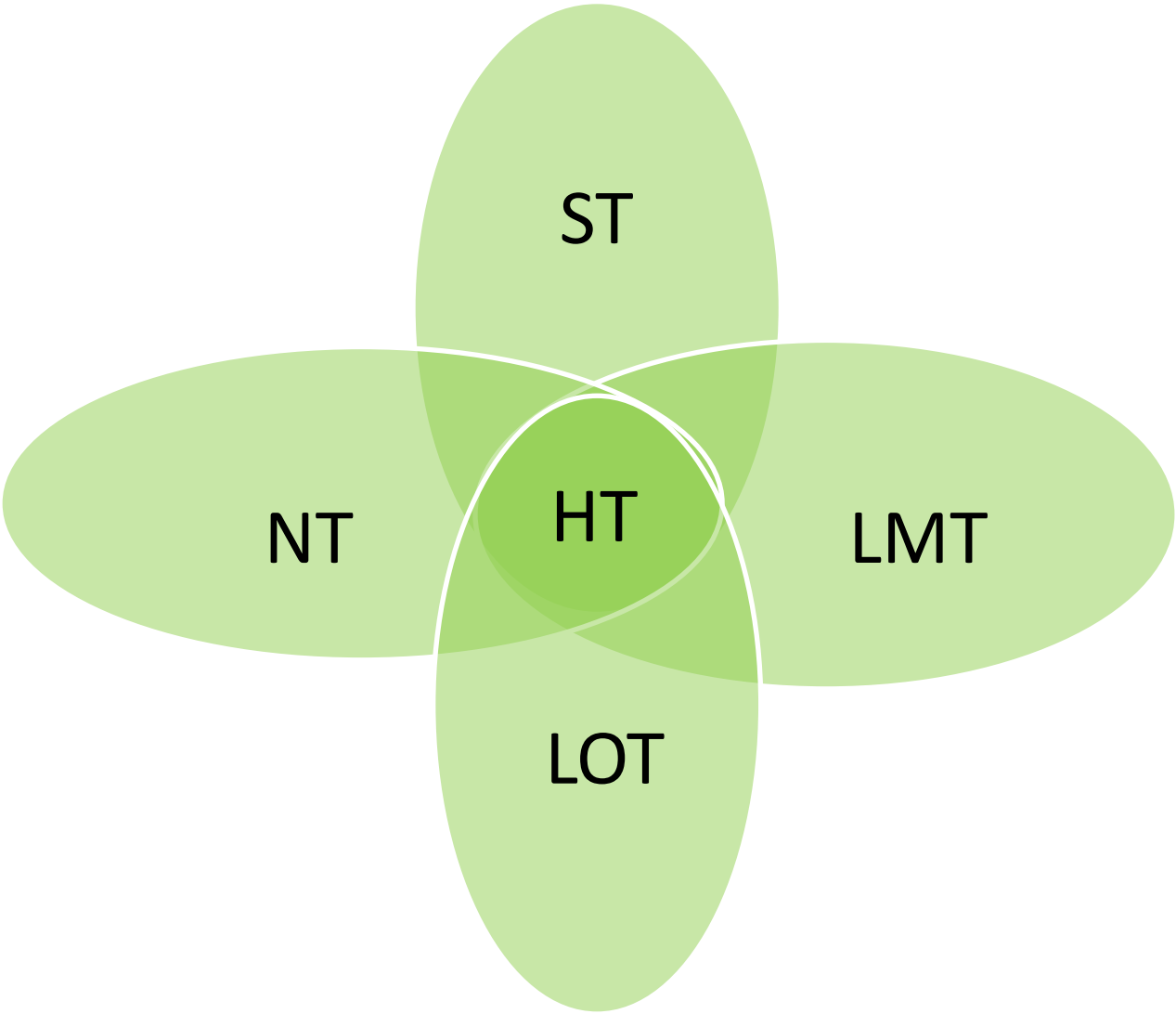
Definition of Ecosystem

- An ecosystem is a complex, integratedsystem made up of diverse living organisms that operate in competition and collaborationwithin the system's boundaries. Through biological interactions, it has the capacity to convert available resources to higher-value assets. It has the capacity for long term survival over a variety of conditions and a tendencyto grow, adaptand evolve toward greatercomplexity whenever excess energy and resources are available.

Definition of a TechnEcology

- A TechnoEcology is a complex ecosystem of technology. The individual elements are made up of tools and techniques invented by humans that interact in both mutualistic and competitive manners to increase the variety of technologies and the complexity of interaction.

FIVE REGIONS TechnEcology of the future –Joel Barker



SUPER TECH (ST)

1. Superabundance is just around the corner
2. Science and technology, given enough time and money.
3. It is time for human being to move beyond nature with our own devices.
4. Given the choice, human beings will always choose leisure over work

Bigger is beautiful

LIMITS TECH (LMT)

1. Scarcity is just around the corner.
2. Science and technology, as they have been used for the past century, are faustian contracts, bringing short-term advantages but long-term disaster.
3. Mother nature knows best.
4. Human beings are going to have to work very hard if they want to survive.

Efficiency is beautiful

LOCAL TECH (LOT)

1. There is a sufficient amount of resources in the world for everyone.
2. Science and technology are OK as long as they are properly scaled.
3. Humans are the shepherds of nature.
4. Humans need to work to become fully human.

Small and Local is beautiful

NATURE TECH (NT)

1. All human needs can be fulfilled using Nature's system.
2. Mother nature has already solved all of our problems. Science's job is to find her answers and create compatible technologies using those solutions.
3. Our relationship with nature is that of a co-equal partner.
4. Our work is to learn to live well with nature.

Nature is beautiful

HUMAN TECH (HT)

1. The real needs of humans are not material needs.
2. Science is only now learning how to measure human technology.
3. God or Mother Nature or evolution, depending on your point of view, has endowed us with extraordinary capabilities.
4. Our true work is to know ourselves.

We are beautiful

DEFINISI PERTANIAN

Pertanian ialah suatu aktiviti (manusia) yang dijalankan terutama ***untuk menghasilkan makanan dan gentian*** (bahan api, serta bahan-bahan lain) melalui kegunaan tumbuh-tumbuhan dan haiwan secara terkawal dan berhati-hati.

Justeru itu, ***pertanian adalah suatu aktiviti ekonomi yang sangat penting*** walaupun keluarannya tidak dinyatakan dalam istilah kewangan. (C.R.W Spedding (1994))

DEFINISI LESTARI

"Pelaburan kemanusiaan" dalam satu sistem kehidupan dijangka berkeupayaan menyediakan ***kualiti hidup*** untuk semua individu di muka bumi dan ***melestarikan ekosistem semula jadi*** (Bruntland, 1987)

Cabaran Yang Dihadapi oleh Sistem Pertanian dan Pemakanan

- Peningkatan Penggunaan Tanah untuk Pelbagai-Fungsi
- Berlaku peralihan dalam pengertian (makna) terhadap ilmu dan ahli sains
- Memahami dan menghayati nilai murni penglibatan semua
- The virtues of inclusivity.

Cabaran Yang Dihadapi oleh Sistem Pertanian dan Pemakanan

Peningkatan Kepelbagaian Penggunaan Terhadap Tanah (The increasingly multifunctional landscape),

– Penggunaan tanah untuk pelbagai tujuan selain daripada pertanian merupakan antara pilihan yang perlu dibuat bersesuaian dengan persekitaran.

(The increasingly multifunctional nature of much of the landscape means that agriculture is but one of several competing and intermingled land uses, and there are choices to be made as it adapts to this new environment.

Cabaran Yang Dihadapi oleh Sistem Pertanian dan Pemakanan

- Berlakunya peralihan dalam pengertian/kefahaman terhadap keilmuan dan ahli sains

  (changing meanings of scientific expertise)

  - Peranan ahli atau pakar sesuatu bidang keilmuan akan beralih, apabila pengetahuan terhadap sistem sosio-ekologi yang lebih kompleks makin difahami.

  (The roles of expert knowledge are in transition, as the complexity of socio-ecological systems becomes better understood.)

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Cabaran Yang Dihadapi oleh Sistem Pertanian dan Pemakanan

- Kesedaran kepentingan untuk terlibat sama
- .
  - Peningkatan kesedaran dikalangan masyarakat dipelbagai peringkat terhadap kepentingan penglibatan dan mengambilberat dalam mengenalpasti dan menyelesaikan masaalah alam persekitaran.

AMALAN PERTANIAN SEMASA

PENINGKATAN

1.PENGGUNAAN BAHAN KIMIA
2.PENGGUNAAN AIR
3.INPUT PERTANIAN
(PENGGUNAAN BENIH 140 KG/Ha)
4.PENCEMARAN UDARA DAN AIR
5.PENGLIBATAN BADAN
6.KEBERGANTUNGAN KEPADA BURUH ASING
7.SUBSIDI KERAJAAN

PENGHAPUSAN/ PENGASINGAN

1.MIKROBIOLOGI TANAH
2.KESEIMBANGAN EKOSISTEM

KEMOROSOTAN

1.KESUBURAN TANAH
2.KESEIMBANGAN EKOLOGI DAN KEHIDUPAN SEKITAR
3..DAYA TAHAN BAGI SETIAP VARIETY BIJI BENIH
4. TENAGA KERJA MUDA DALAM BIDANG PERTANIAN

ISU

1. PRODUKTIVITI YANG TINGGI PADA AWALNYA TELAH MULA MENURUN
2.MEMERLUKAN KAWASAN YANG LUAS
3.MIGRASI MASYARAKAT LUAR BANDAR KE BANDAR
4. SUB SEKTOR PERLADANGAN DIMONOPOLI OLEH PELABUR ASING
5. MEMERLUKAN MODAL YANG BESAR

BISNES MODEL AGRO-EKOLOGI

PENINGKATAN

1.KESUBURAN TANAH
2. PERSEKITARAN
3.KESIHATAN
4. PENGLIBATAN KOMUNITI IN-SITU

PENGHAPUSAN/ PENGASINGAN

1.Penggunaan kimia
2.PENCEMARAN UDARA
A3.PENCEMARAN AIR
4. PEMBAKARAN/ PEMBUANGAN SISA

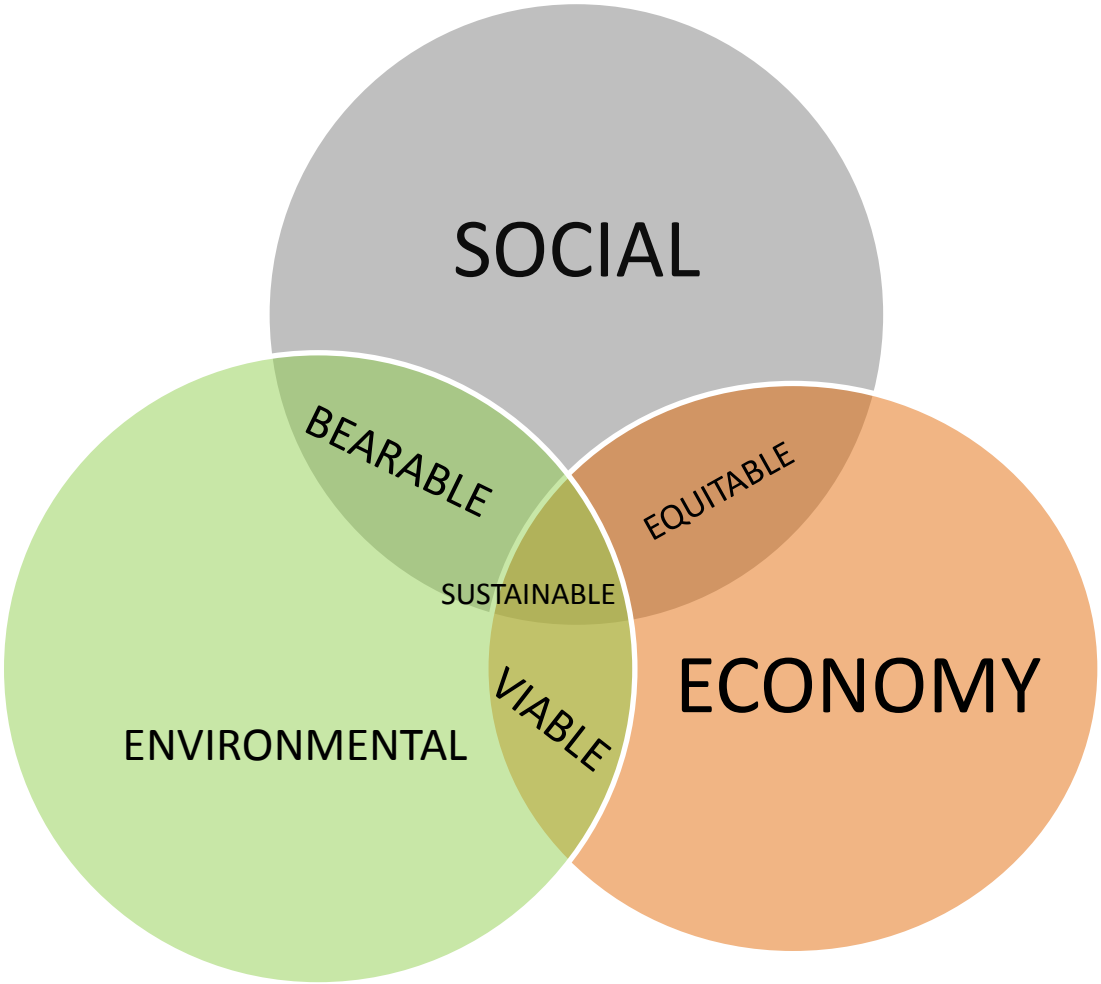
PENGURANGAN/ PENJIMATAN

1. KOS INPUT PERTANIAN
2. PENGGUNAAN AIR
3. SISA PERTANIAN
4.PENGGUNAAN TENAGA (FOSIL)
5. SUBSIDI KERAJAAN

PENGHASILAN

1. LADANG/ TAMAN KOMUNITI
2. LADANG/ TAMAN SEKOLAH
3.PENDAPATAN TINGGI PEKERJA LADANG
4.PENGURUSAN SISA YG. EFISYIEN
5. EDUTOURISM/ AGROTOURISM

MALAYSIA PLAN - EXECUTION




SCHOOL GARDEN


COMMUNITY GARDEN

Kesimpulan dan rumusan

- Negara Malaysia mempunyai satu Dasar Pertanian Negara(DPN) bagi tahun 2011–2020 iaitu Dasar Agro-Makanan yang jelas arahtujunya.

- Program Transformasi Ekonomi (ETP) telah menggariskan kepentingan subsektor padi dalam program Jaminan Bekalan Makanan (Food Security).

- Pendekatan Yang dicadangkan untuk dilaksanakan bersawah secara skala besar oleh individu/kumpulan melalui kaedah sewaan tetap, kongsi keuntungan ataupun charge pengurusan daripada tuan tanah di MADA dan lain-lain kawasan padi boleh meminggirkan peranan keluarga petani dalam jangkapanjang daripada meneruskan budaya bertani.

Kesimpulan dan rumusan

sambungan

- Hasil menggunakan kaedah menanam padi yang sama (konvesyenal) telah tidak lagi memberi peningkatan p
- Pulangan walaupun dengan menggunakan hibrid baru dan penggunaan teknologi serta pestisida dan rumpai kimia yang baru.
- Pihak berkuasa yang terlibat harus meneliti kaedah alternatif yang boleh memberi pulangan tanpa meningkatkan perbelanjaan kerajaan melalui pemberian subsidi.

- Bagi agro-makanan yang lain termasuk ternakan dan akuakultur penggunaan kaedah menggunakan mikrob untuk menghasilkan bahan makanan harus dipertingkatkan.

Kesimpulan dan rumusan
sambungan

- Pembangunan dan Penyelidikan termasuk bidangan sosio-ekologi harus diambil kira dalam menggunakan teknologi .

- Teknologi berasaskan sumber tempatan harus diberikan penekanan agar tiada pembaziran sumber termasuk sisa pertanian dapat digunakan dengan efisyen.

- Kerjasama dan jalinan pintar oleh semua pihak yang terlibat daripada pengeluar(petani), pedagang, pengilang, pengguna dan pembuat dasar harus diujudkan dan diperkukuhkan agar penyelesaian yang terbaik boleh terhasil untuk dinikmati bersama.

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Indonesian System of Rice Intensification

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Our Earth is Heating

Indonesian System of Rice Intensification

1. Burning Paddy straw after harvest
2. Over used of chemical pesticides and chemical Fertilizer
3. Flooding of paddy field

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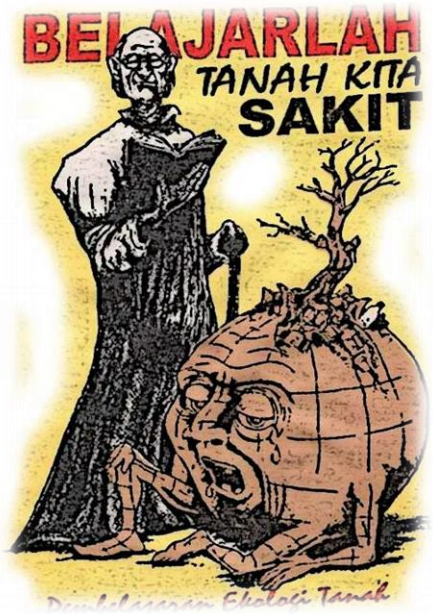
1. Our earth is in critical condition

Indonesian System of Rice Intensification

Too much used of chemical fertilizer will caused Declining of productivity and less fertile of soil





Continuously using chemical fertilizer and chemical pesticide



The Soil becomes hard, Compact, Sticky, Difficult during soil preparation and has no water holding capacity

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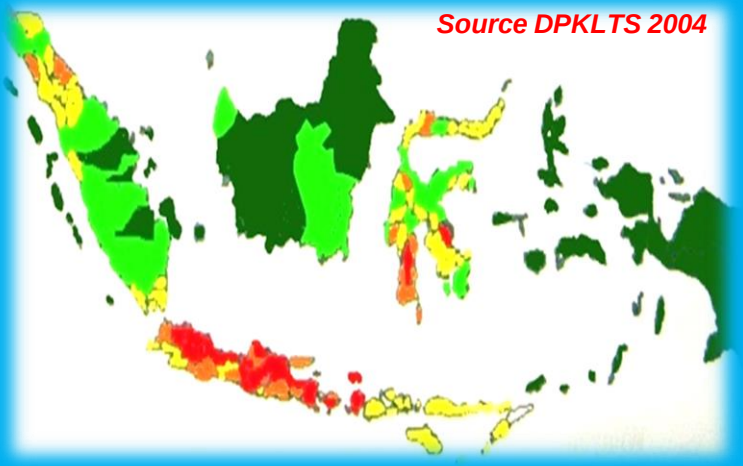
2. Water becoming scarce

Indonesian System of Rice Intensification

Water resources is becoming scarce



- Very – very Critical
- Very Critical
- Critical
- Less Critical
- **No Critical**

3. Global warming

BURNING PADDY STRAW AFTER HARVEST

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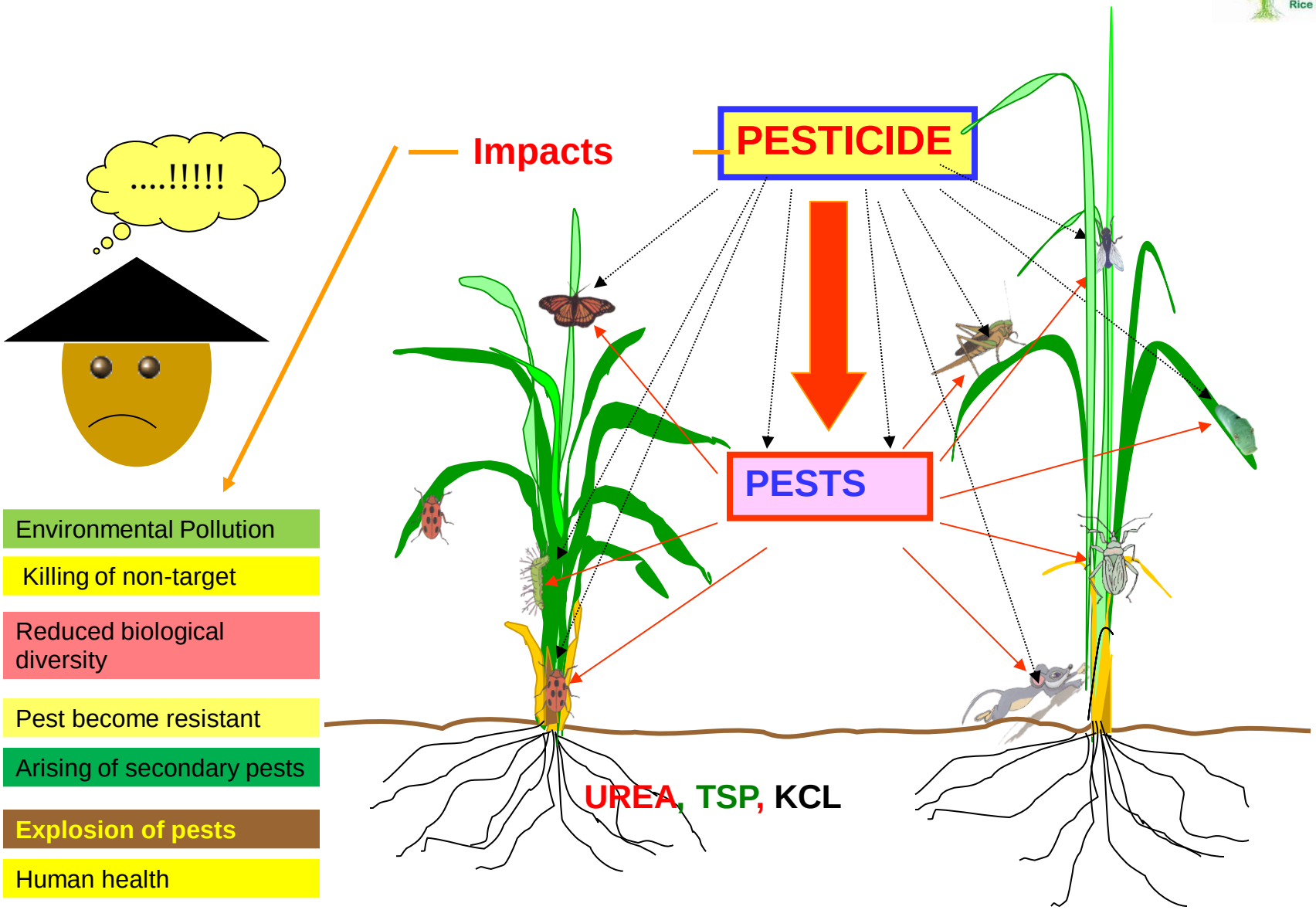
4. Over used of Pesticide

Indonesian System of Rice Intensification



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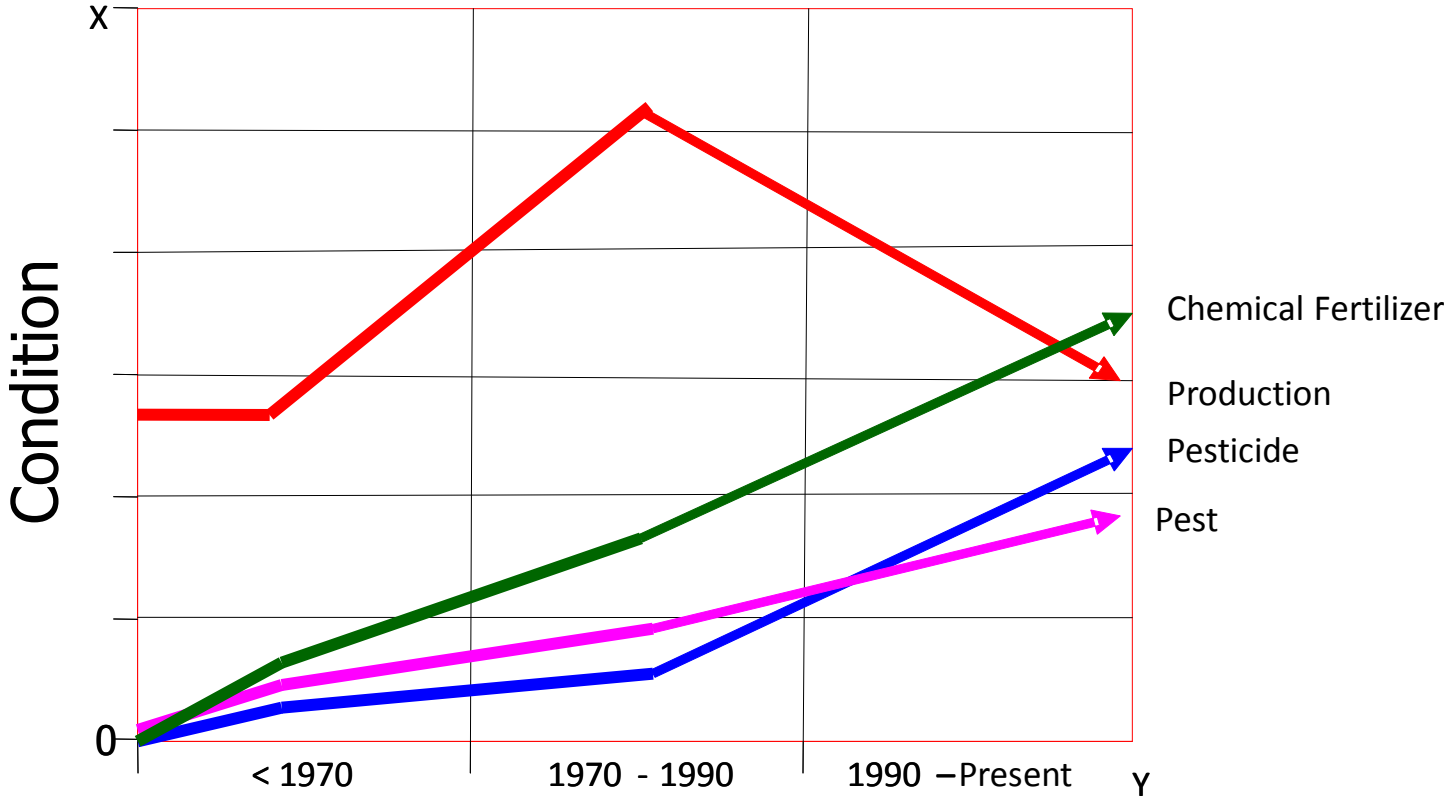
5. Declining of Production

Indonesian System of Rice Intensification

IMPACT OF CHEMICAL FERTILIZER & PESTICIDE TO RICE PRODUCTION



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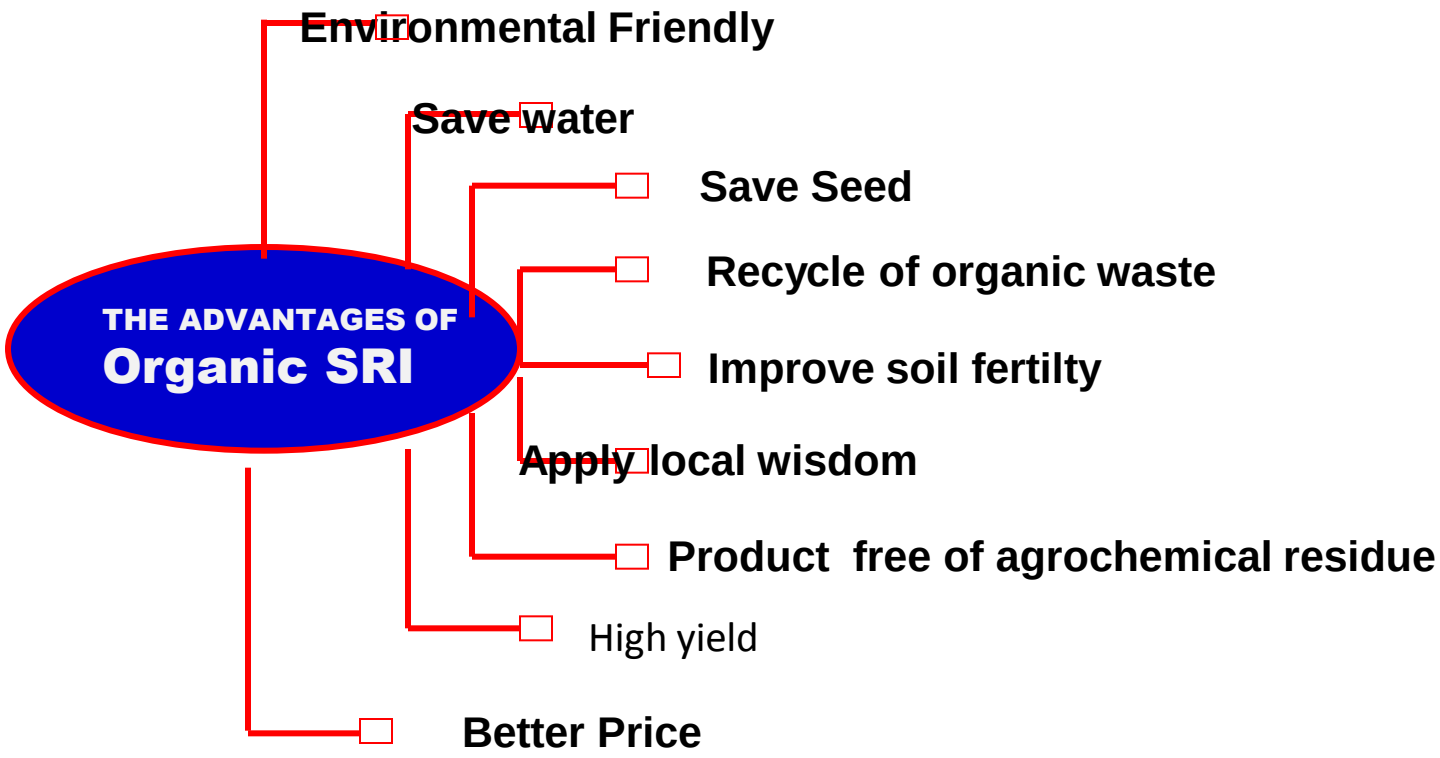
Advantages of Organic SRI

Indonesian System of Rice Intensification



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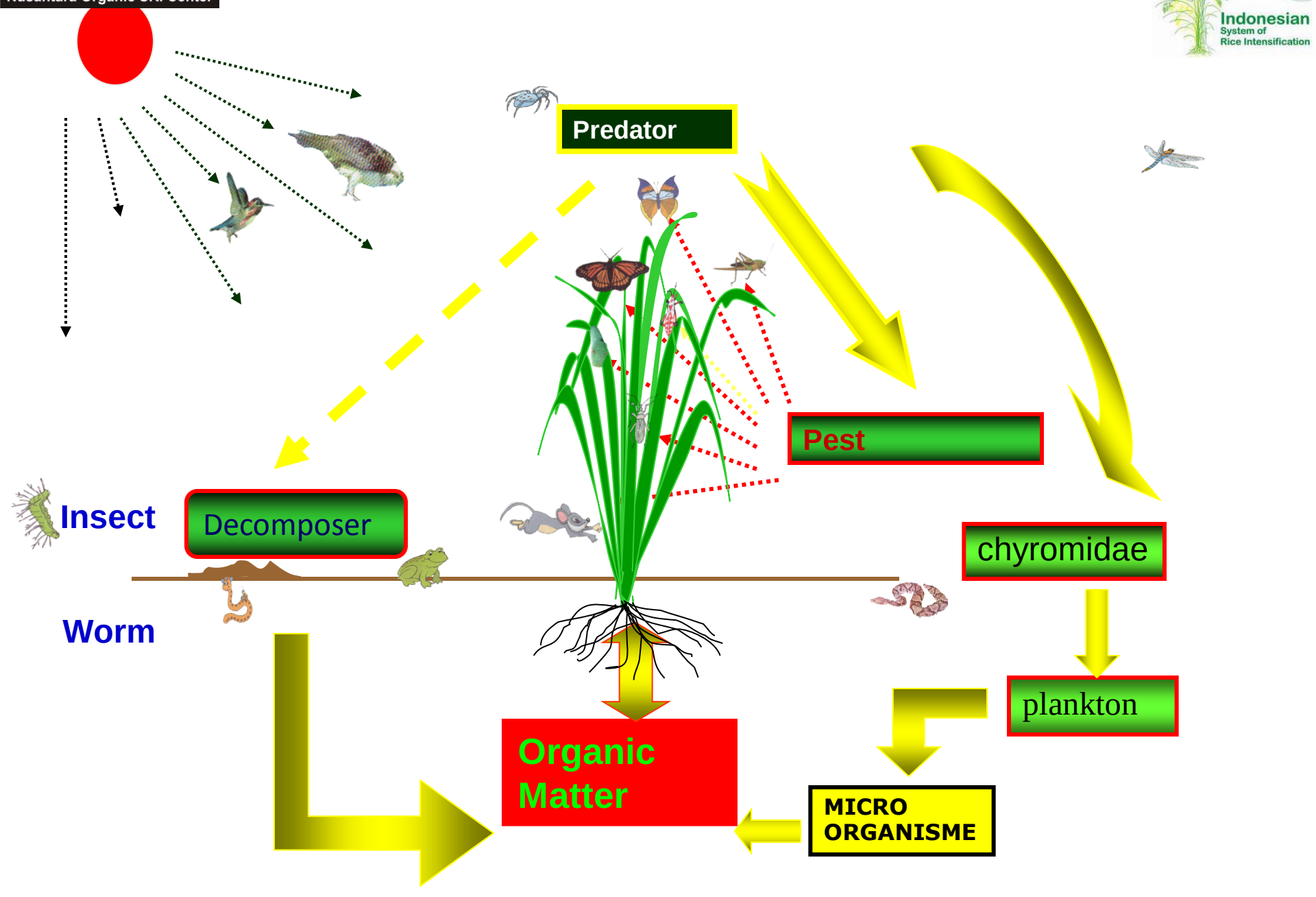
1. Environmental Friendly

Indonesian System of Rice Intensification



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2. Save Water

Indonesian System of Rice Intensification

Paddy Field Should Not be Flooded / Submerging Water Only in the Channel / Ditch

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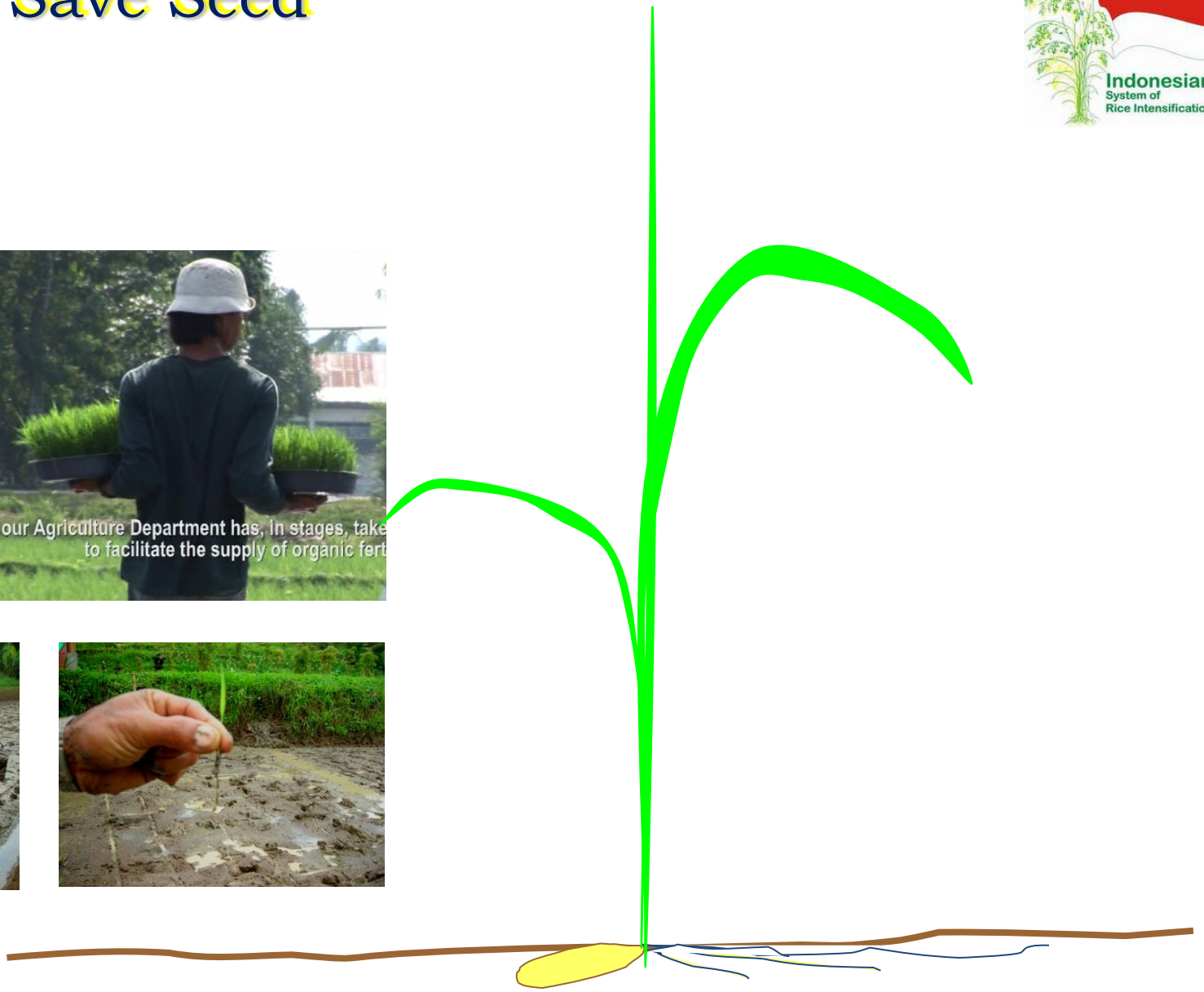
3. Save Seed

Indonesian System of Rice Intensification



Transplanting within 15 minutes young seedling 7 – 10 days, single seedling, shallow, roots horizontal only 5 kg per Ha

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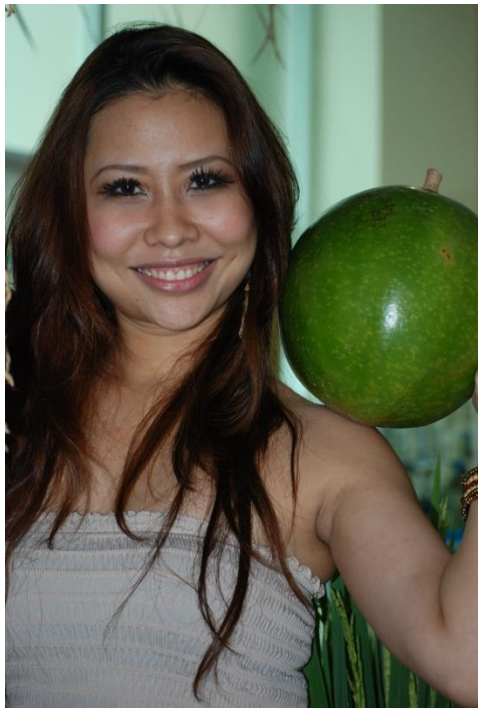
4. Recycle of Organic Waste

Indonesian System of Rice Intensification

Empowering Farmers and Local Wisdom



by making own fertilizer (compost)
liquid fertilizer and bio pesticide

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5. Improve The Soil Fertility

Indonesian System of Rice Intensification

Improving Soil Fertility

Applying Compost during soil preparation

5 - 7 Ton / Ha depends on soil fertility

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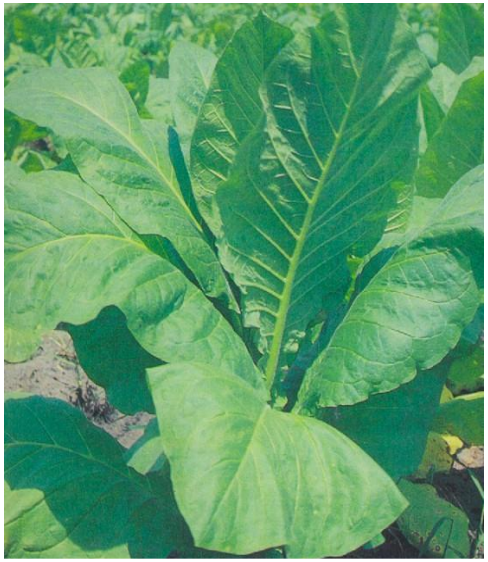
6. Apply Local wisdom

Indonesian System of Rice Intensification

GARLIC
(Allium Sativum)



TOBACCO

GERANIUM

SELASIH
(Ocimum B)

SEMBUNG
(Blumea B. L)

DLINGO
(Acorus Calamus L)

SUREN
(Toona Sureni)

BERENUK
(Crescentia C)

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7. Free of Chemical Residues

Indonesian System of Rice Intensification

Laboratory Analysis

No.	Test Parameters	Unit	Test Results	
			Organic	An-Organic
1.	Water Content	%	12,69	17,669
2.	Ash Content	%	1,53	0,06
3.	Fat Content	%	0,87	1,82
4.	Protein Content	%	6,32	0,01
5.	Carbohydrate Content	%	69,05	20,50
6.	Reducing Sugar Content	%	-	5,41
7.	Crude Fiber Content	%	0,065	-
8.	Pesticide Residues	mg/kg	Undetectable	0,006

Note : - Maximum Limit of Pesticide Contents 0,005 mg/kg
- Carbohydrate Contents70 %

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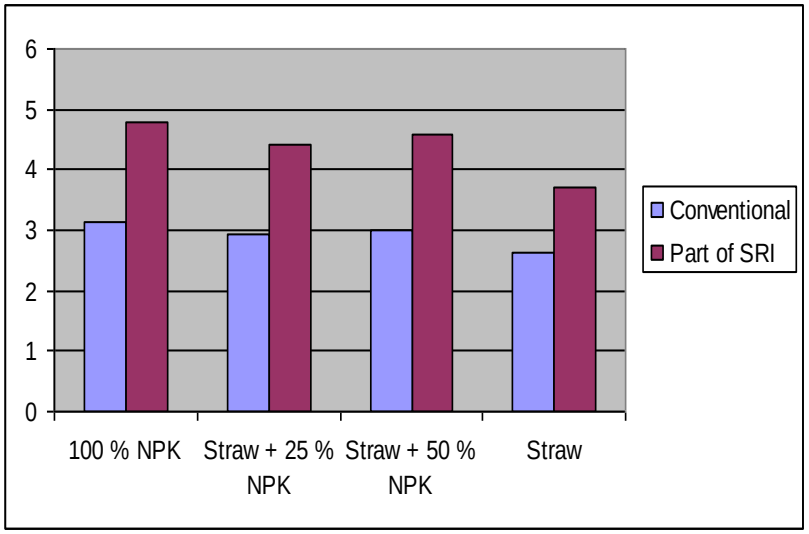
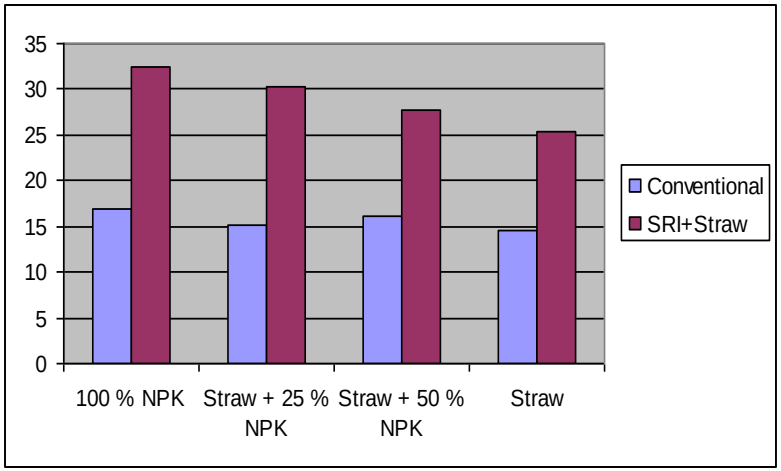
8. High Yield

Indonesian System of Rice Intensification





CONVENTIONAL 5.0 T/HA

S.R.I. 7.5 T/HA

Sugiyanta , 2008 (IPB) BOGOR

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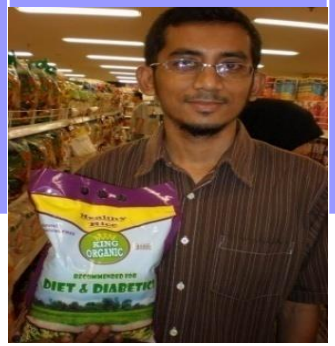
9. Better Price

Indonesian System of Rice Intensification

NO	OUTLET	Variety	Packing	Price
1.	Kem chicks	Bio Cell	2 Kg	Rp. 33.000 (Rp. 16.500/kg)
		Beras Sehat	2 Kg	Rp. 35.900 (Rp. 17.500/kg)
		PD.Padi Mulya		
		Keep Me Fit	5Kg	Rp. 75.000 (Rp. 15.000/kg)
		Kuda Kaisar (Platinum)	5 Kg	Rp. 72.500 (Rp. 14.500/kg)
		Kuda Kaisar (Gold)		
		Herbal Ponni	5 Kg	Rp. 69.500 (Rp. 13.900/kg)
		Basmati	5 Kg	Rp.118.500 (Rp.23.700/kg)
2.	Healthy Choice	Beras Organik		
			1 Kg	Rp. 92.500
			1 Kg	Rp. 17.500
3.	Carrefour	Amani Island (Organik)		
		Ambrosia Organic Rice	1 Kg	Rp. 14.800
			5 Kg	Rp. 86.100 (Rp.17.220/kg)



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Our Earth is Smile Again

Indonesian System of Rice Intensification

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System of Rice Intensification
Organic SRI

Indonesian System of Rice Intensification

- 2006: The first SRI trial was carried out at locations (both at farmer's field and research centre, at 1600-2000 masl) in Eastern Bhutan.
- Showed better crop performance.

63 tillers

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System of Rice Intensification
Organic SRI

Indonesian System of Rice Intensification

Root Management

Soil preparation through holistic way

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Principle of Organic SRI

Indonesian System of Rice Intensification

a. Young seedling between 7-10 days/just two leaves
b. Seedling planted singly 30 x 30 cm or wider
c. Should be transplanted singly in shallow hill
d. Soil should be kept moist, flood and drain irrigation
e. Weeding should be conducted starting 10 days after transplanting, and repeated 3 times in 10 days interval

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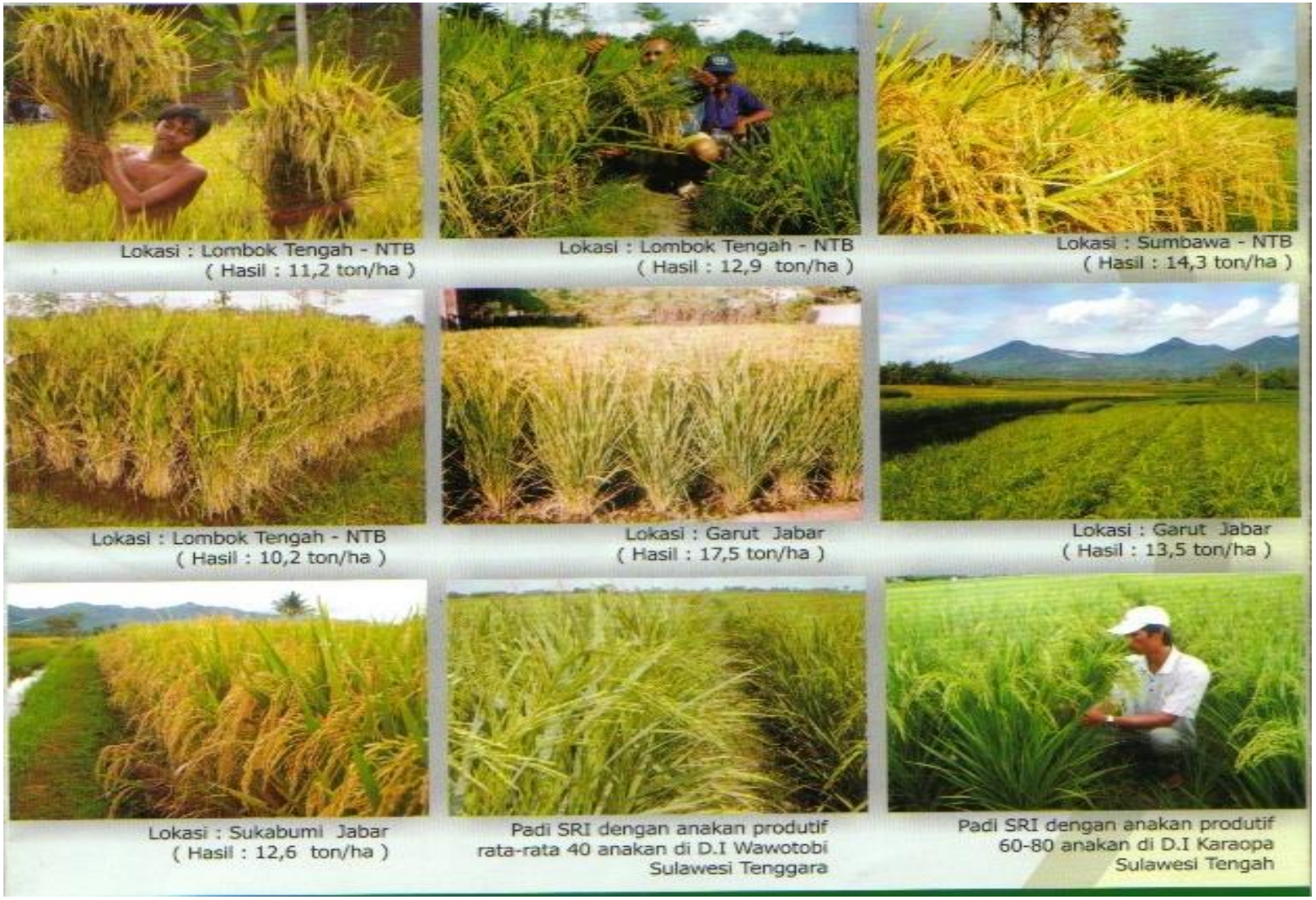
SRI – Organic Cultivation
10. Harvest

Indonesian System of Rice Intensification

NOSC Nagrak - Sukabumi
Nusantara Organic SRI Center

SRI – Organic Cultivation Harvest

Indonesian System of Rice Intensification



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