

The fourth industrial revolution and agriculture

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Key messages

- 1) we made serious blunders in agriculture, and because of this, our economy, environment and our health suffers
- 2) we can make it right by learning from Mother Nature
- 3) the fourth industrial revolution gives us the tools
- 4) the first step will have to come from consumers.

MONOCULTURE:
the legacy of the
industrial
revolution on
agriculture

- *Specialized
- *Mass
production
- *Uniform
products



Source: www.freefoto.com

Modern food system: poor Filipino version



- Rice from Vietnam
- Fish from China
- Canola oil from Canada
- Plate from China
- Spoon from India

Rice monoculture Philippines

- Uses about 1/3 of all arable lands
- Uses up more than 50% of fresh water resources
- The main source of income for 2.5 million families, including 2.1 million farmers



Source: [huffpost.com](https://www.huffpost.com)

MONOCULTURE in aquaculture

- *Specialized
- *Mass production
- *Uniform products



Source: img.gulftimes.com

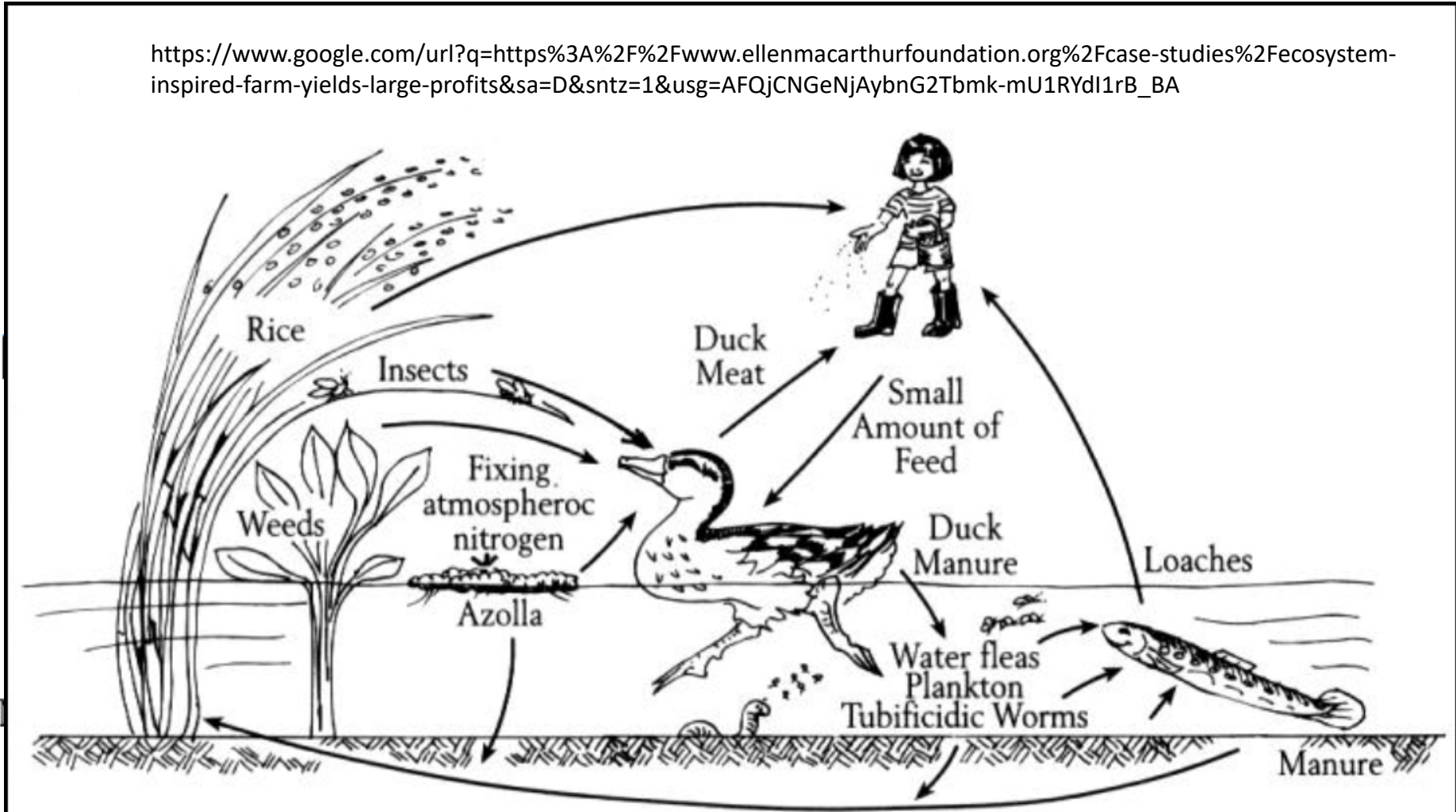
Negative consequences of monoculture

1. high poverty incidence in the farm sector
2. High external costs in terms of environmental damage and resource depletion
3. an increasing global incidence of chronic diseases

POLYCULTURE: a nature-inspired food production system

The system produces rice, meat, eggs, fish with reduced external input

https://www.google.com/url?q=https%3A%2F%2Fwww.ellenmacarthurfoundation.org%2Fcase-studies%2Fecosystem-inspired-farm-yields-large-profits&sa=D&sntz=1&usg=AFQjCNGeNjAybnG2Tbmk-mU1RYdl1rB_BA



Rice-duck -
azolla





Rice-fish integration, a millennium-old polyculture system that gives 30% more profit than rice alone

Nature's under-appreciated secrets

1. there are more beneficial creatures in nature than harmful ones
2. Cooperation, not competition, is the more important force that shapes the biological world, and humanity as a whole
3. Biological diversity is strongly correlated with biological productivity

Fourth industrial revolution concepts and technologies

1. Fusion/convergence: cooperation!
2. Understanding and designing complex production systems
3. Managing complex supply chains

Consumer preference will shape the future of agriculture



Or



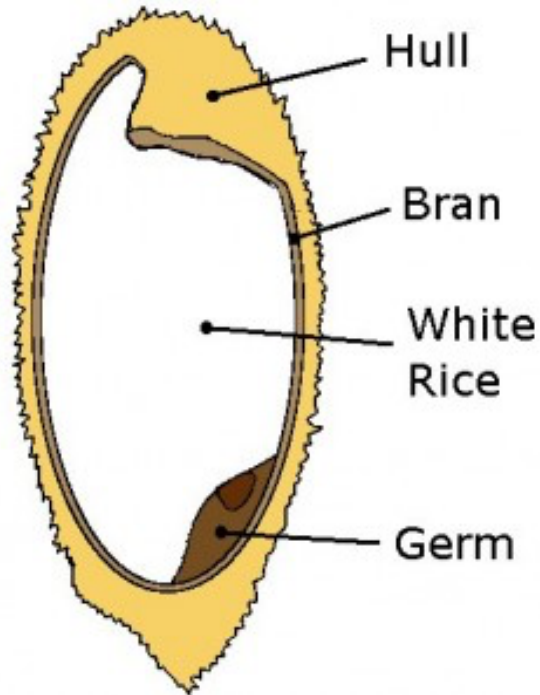
It is up to you!!

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- 1) we made serious blunders in agriculture, and because of this, our farmers, environment and our health suffers;
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End

Fundamentals



Hull: silicon dioxide, lignin,

Bran: antioxidants,
vitamin B, fiber, phytic
acid

White rice :
mainly starch

Germ: protein, lipids,
fiber; antioxidants

Contaminants:
As, Pb, Hg,
Cd, Cu, Mo;
pesticide
residues

Brown rice is the white
rice (92%)+ bran (6%) +
germ (2%)

Integrated Multi-trophic Aquaculture

The system produces fish, clams, sea cucumber

