



เศรษฐศาสตร์เกษตร  
และทรัพยากร  
มหาวิทยาลัยเกษตรศาสตร์

# Economics of Tropical Agriculture

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# Economy



Economy comes from the Greek word for 'one who manages a household'

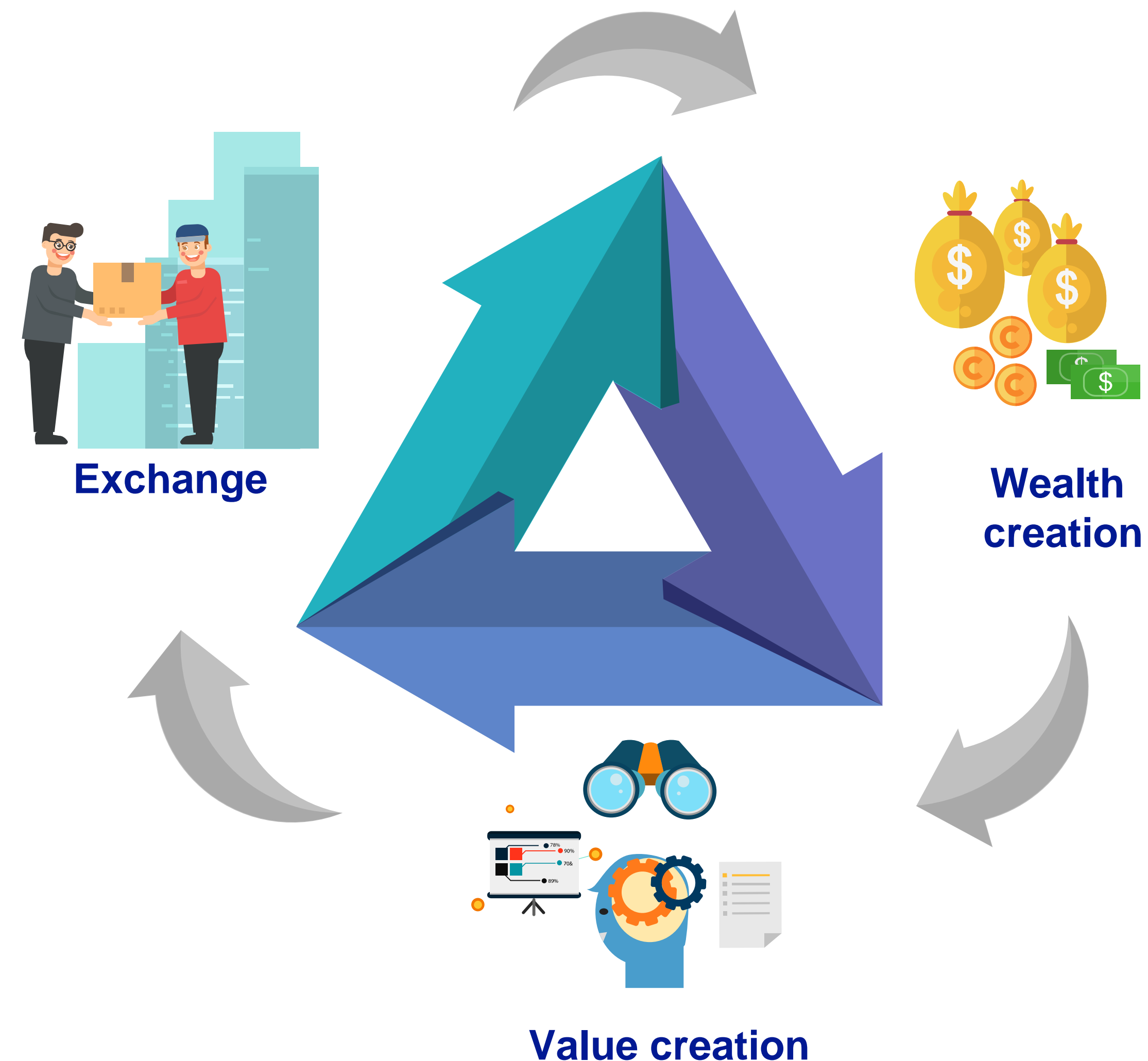
**A farm-household** faces many decisions;

- Who ploughs the land?
- Who applies fertilisers?
- Who harvests rice?
- A farm-household must allocate its scarce resources among its members.

Like a farm-household, **a society** faces many decisions;

- what jobs will be done?
- And who will do them?
- It must be also allocate the output of goods and services that they produce.

The relationship economy



# Scarcity and Economics

The management of society's resource is important because **resources are scarce.**

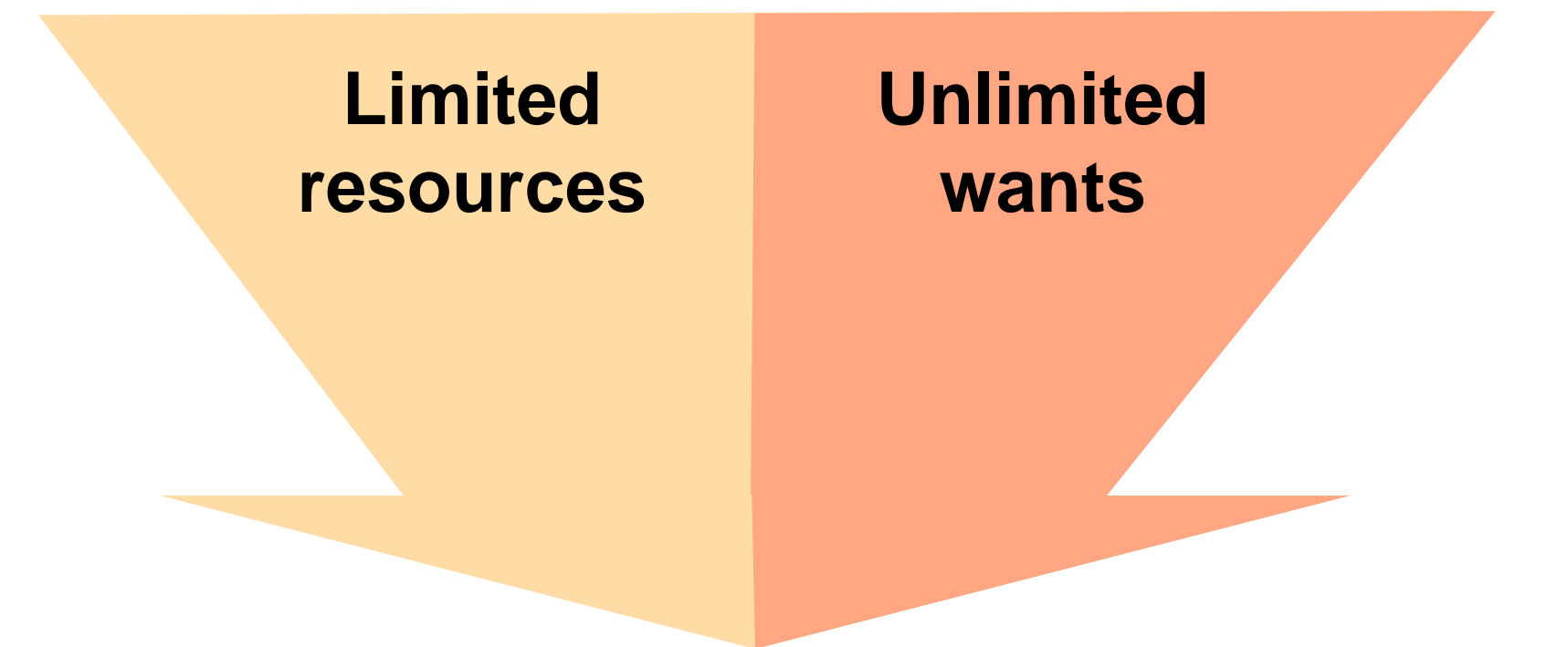
Society has less to offer than people demands.



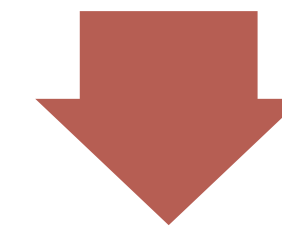
**Scarcity**

**Economists** study how people make decisions:

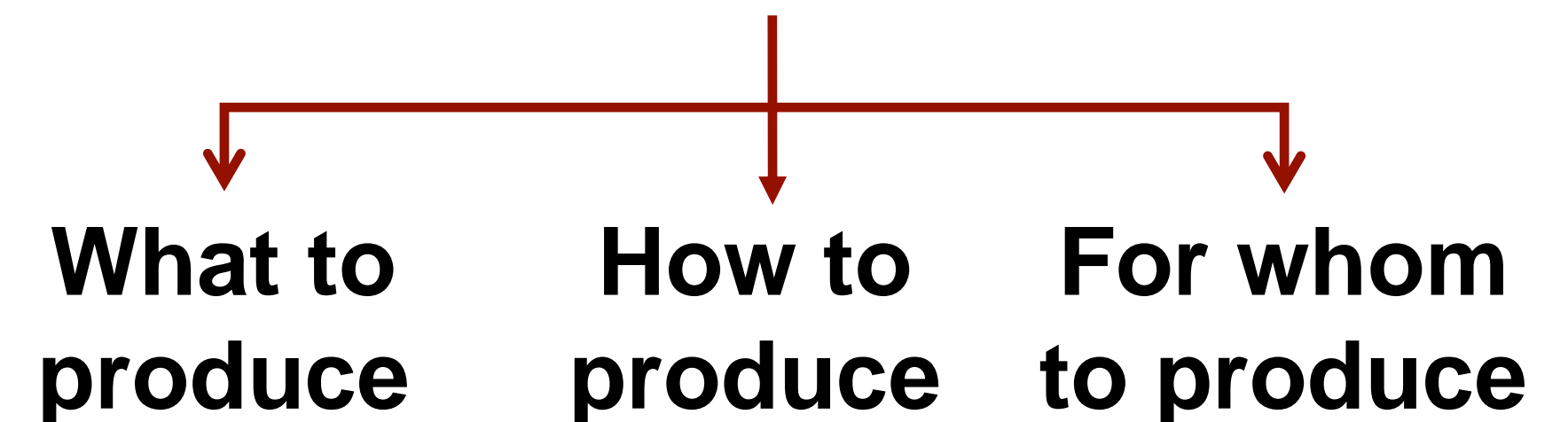
- How much do they work?
- What do they buy?
- How much do they save?
- How much do they invest their saving?



**Scarcity**

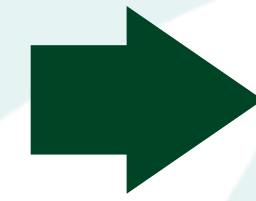


**Choices**



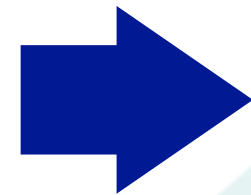
# 10 Principles of Economics

**How people  
make decision**



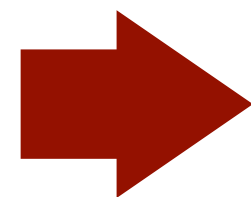
- 1. People faces tradeoffs.**
- 2. The cost of something is what you give up to get it.**
- 3. Rational people think at the margin.**
- 4. People respond to incentives.**

**How people  
interact**



- 5. Trade can make everyone better off.**
- 6. Markets are usually a good way to organise economic activity.**
- 7. Governments can sometimes improve market outcomes.**

**How economy  
as a whole  
work**



- 8. A country's standard of living depends on its ability to produce goods and services.**
- 9. Prices rise when the government prints too much money.**
- 10. Society faces a short-run tradeoff between inflation and unemployment.**

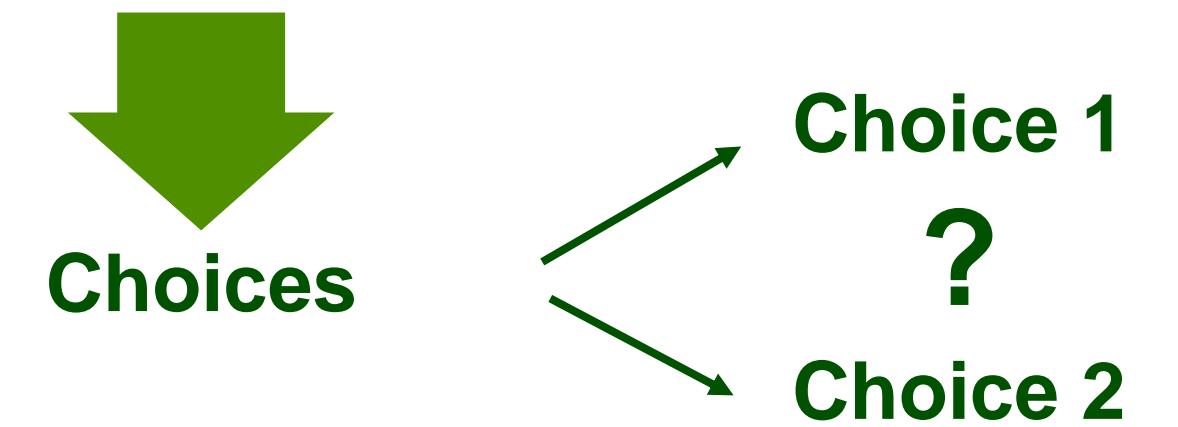
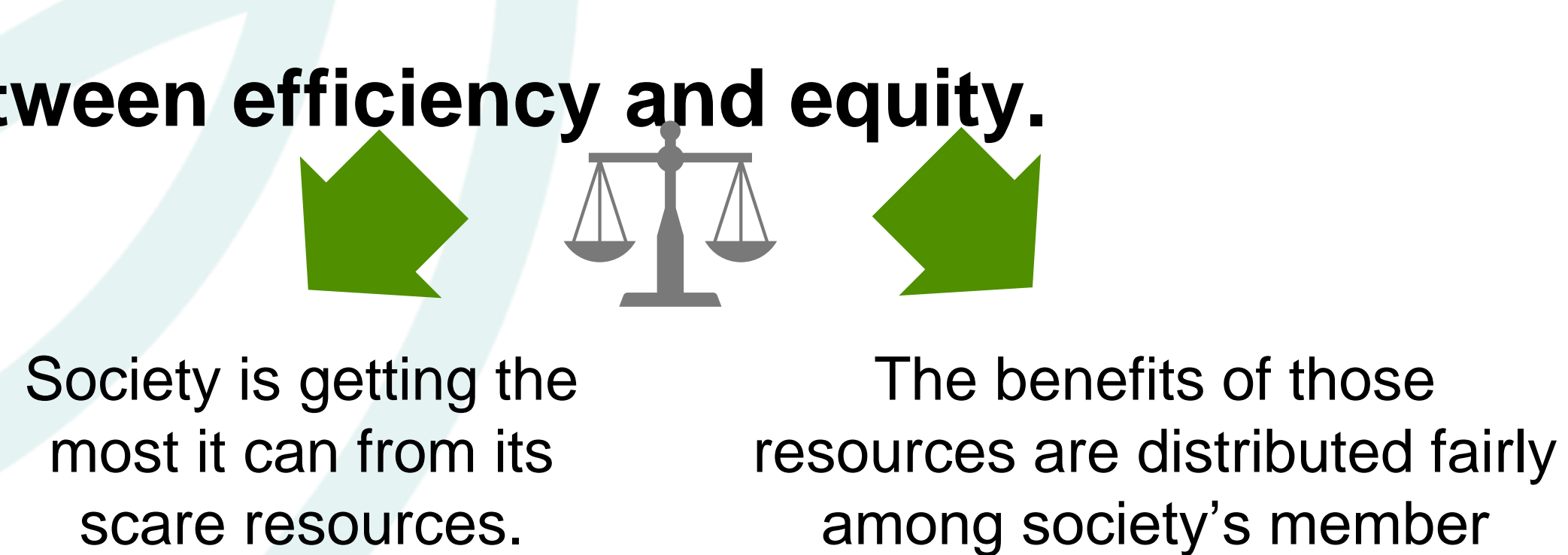
# How people make decision



- 1. People faces tradeoffs.**
- 2. The cost of something is what you give up to get it.**
- 3. Rational people think at the margin.**
- 4. People respond to incentives.**

# Principle 1: There is no free lunch.

- To get one thing that we like, we usually have to give up another thing that we like.
- Society faces between efficiency and equity.



## Example

### Coconut policy

- Subsidy policy
- Quota



Processors



vs



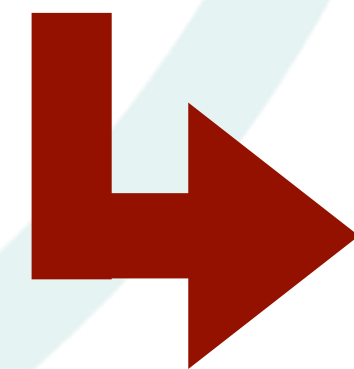
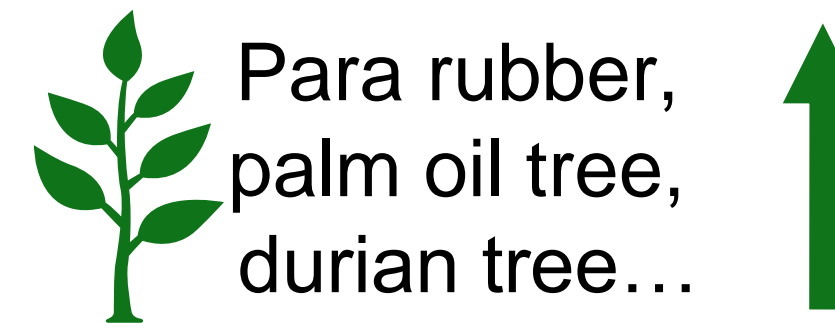
Small farmers



# Principle 2: The cost of something is what you give up to get it

People make decisions require comparing the costs and benefits of alternative courses of action.

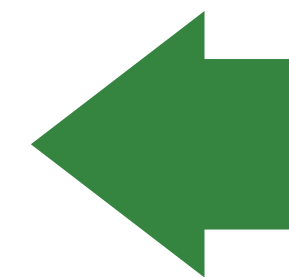
For example, the benefits of expanding agricultural areas is the economy growth.



What is the cost? The cost is the opportunity cost of forgone forest area.

WHAT'S YOUR  
OPPORTUNITY COST?

The opportunity cost of an item is what you give up to get that item, when making any decision.

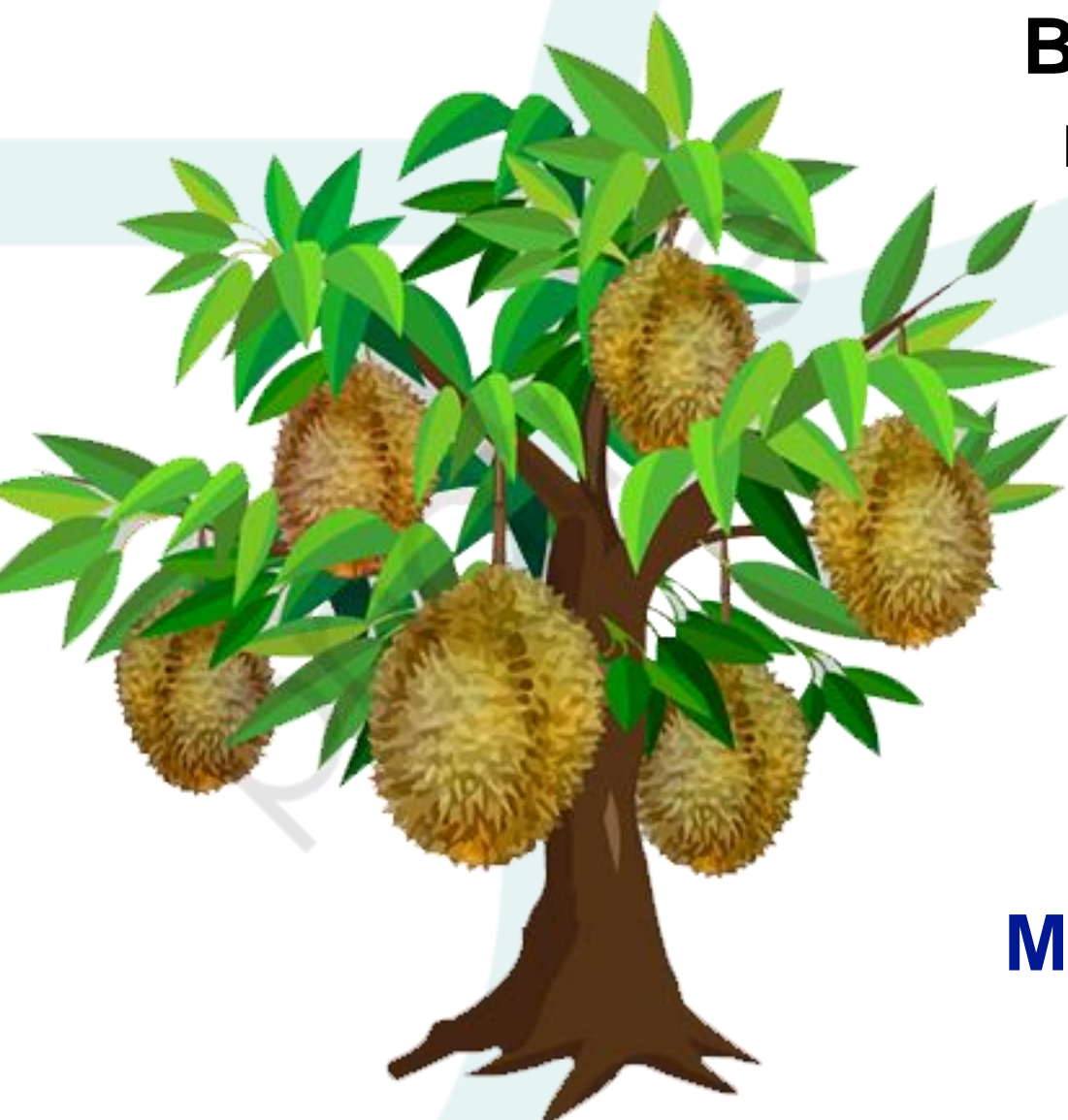


# Principle 3: Rational people think at the margin

Many decision in life involve making small incremental adjustments to an existing plan of action. This calls “**marginal changes**”.

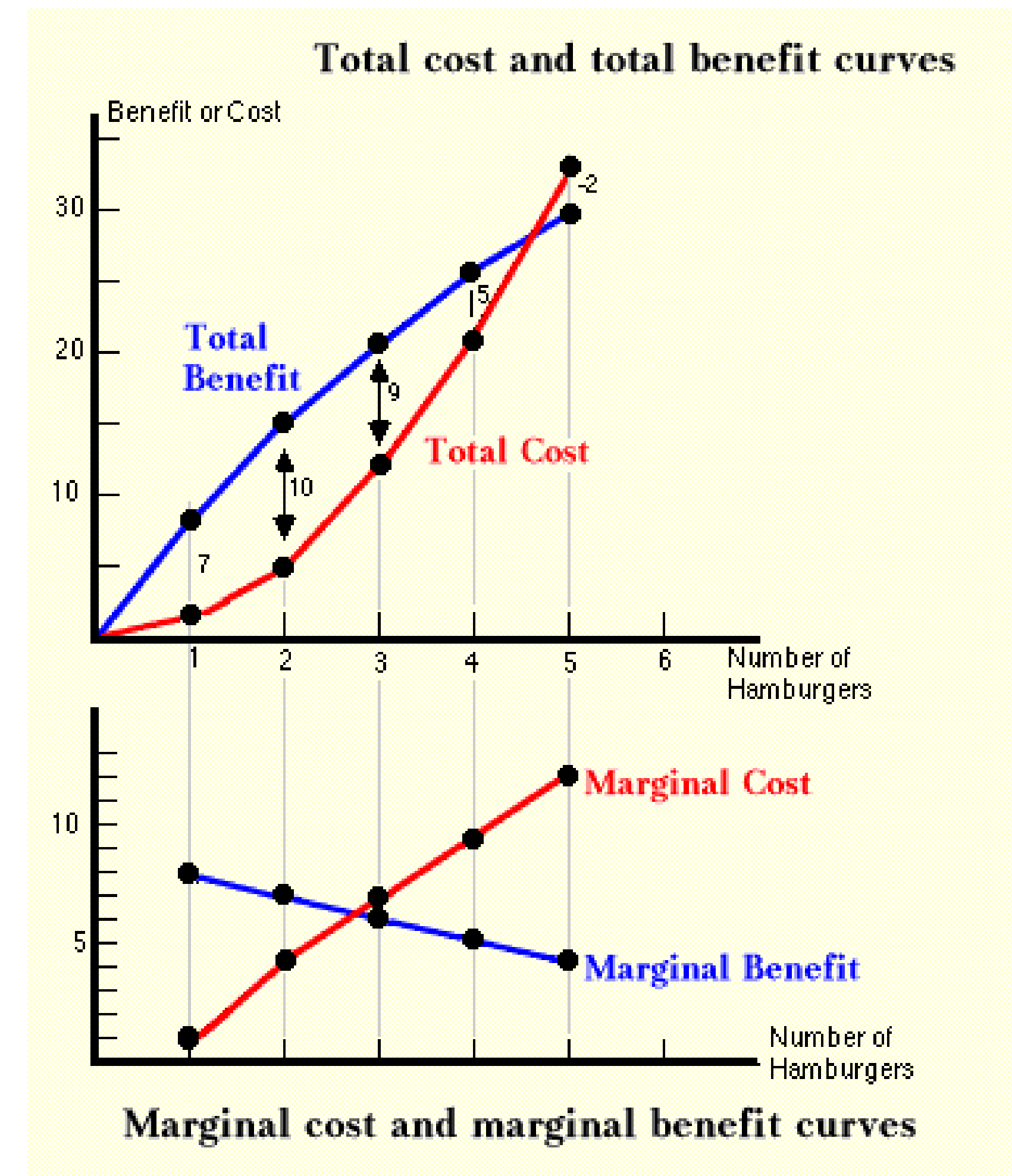
**For example:** a farmer wants to make a decision to expand his farm-business. He needs to know that additional benefits that an extra area of durian trees would offer and the additional costs that he would incur.

By comparing these marginal benefits and marginal costs, he can evaluate whether the extra area is worthwhile.



How much	
Benefit Per rai	Cost Per rai

**Marginal benefit VS Marginal cost**





# Principle 4: People respond to incentives

Farms make decisions by comparing costs and benefits, their behaviour may change when they were motivated by **an incentive** (the costs or benefit change).

- When the price of durian rises, farmers possibly decide to grow more durian and fewer mangosteen.
- At the sometime, farmers decide to hire more labor and harvest more durians, because benefit of selling durian is higher.

**The central role of incentives in determining behaviour is important for the designing public policy.**

\* Incentives create both direct and indirect effects.



Source: ThaiPBSnews, 7 Aug 2019.

# How people interacts?



**5. Trade can make everyone better off.**



**6. Markets are usually a good way to organise economic activity.**



**7. Governments can sometimes improve market outcomes.**

# Principle 5: Trade can make everyone better off

Trade allows each farm-household gains much from its ability to trade with others.

By trading with others, households can buy a greater variety of goods and services at lower cost.

Trade allows countries to specialise in what they do best and to enjoy a greater variety of goods and services.



ตลาดสุขใจ  
Sookjai Farmers' Market | Since 2010

<p>from thailand and</p> <p>JOINT STOCK COMPANY</p> <p>\$900.00 / Ton</p> <p>Contact Supplier</p>	<p>hot sale high quality durian thailand</p> <p>Dalian Holy Trading Co., Ltd.</p> <p>US \$800.00-\$1400.00 / Metric Ton</p> <p>1 Metric Ton (Min. Order)</p> <p>Contact Supplier</p>	<p>Fresh durian fruit for sale</p> <p>ZIMA THAI TRADERS</p> <p>US \$2.00-\$4.00 / Carton</p> <p>100 Cartons (Min. Order)</p> <p>Contact Supplier</p>	<p>Fresh Cut Durian / Export Qu From Thailand</p> <p>TROPICAL GREEN CO., LTD.</p> <p>US \$40.00 / Boxes</p> <p>50 Boxes (Min. Order)</p> <p>Contact Supplier</p>
<p>Fresh Durian High Quality from Thailand.</p> <p>BULL STARTUP CO.,LTD.</p> <p>US \$10.00-\$18.00 / Kilogram</p> <p>100 Kilograms (Min. Order)</p> <p>Contact Supplier</p>	<p>THAILAND FRESH DURIAN EXPORT BEST PRICE FOR SALE HIGH</p> <p>KAMNAN SAREW ORGANIC FARMING CO.,...</p> <p>US \$5.00-\$10.00 / Kilogram</p> <p>100 Kilograms (Min. Order)</p> <p>Contact Supplier</p>	<p>A4 FRUIT - Fresh Durian AAA</p> <p>A4 FRUIT TRADING CO.,LTD</p> <p>US \$2425.00-\$3000.00 / Ton</p> <p>10 Tons (Min. Order)</p> <p>Contact Supplier</p>	



# Principle 6: Markets are usually a good way to organise economic activity

- Today, most countries develop market economies.
- In a market economy, the decisions are made by million of farms and households, not central planer.
- Farms decide whom to hire and what to produce.
- These farms and households interact in the markerplace, where prices and self-interest guide their decisions. They are guided by an “invisible hand” that leads them to desirable market outcomes; naturally demand and supply.
- Market economies have proven remarkable successful in organising economic activity in a way that promotes general economic well-being.



# Principle 7: Governments can sometime improve market outcomes

**“Market failure”** is a situation in which the market on its own fails to allocate resources efficiently.

One possible cause of market failure is externality.

**An externality is the impact of one person’s actions on the well-being of a bystander e.g. pollution, flood.**

In this case, the government can raise economic well-being through environmental regulation.



# How economy as a whole work

- 8. A country's standard of living depends on its ability to produce goods and services.**
- 9. Prices rise when the government prints too much money.**
- 10. Society faces a short-run tradeoff between inflation and unemployment.**

# Principle 8: A country's standard of living depends on its ability to produce goods and services.

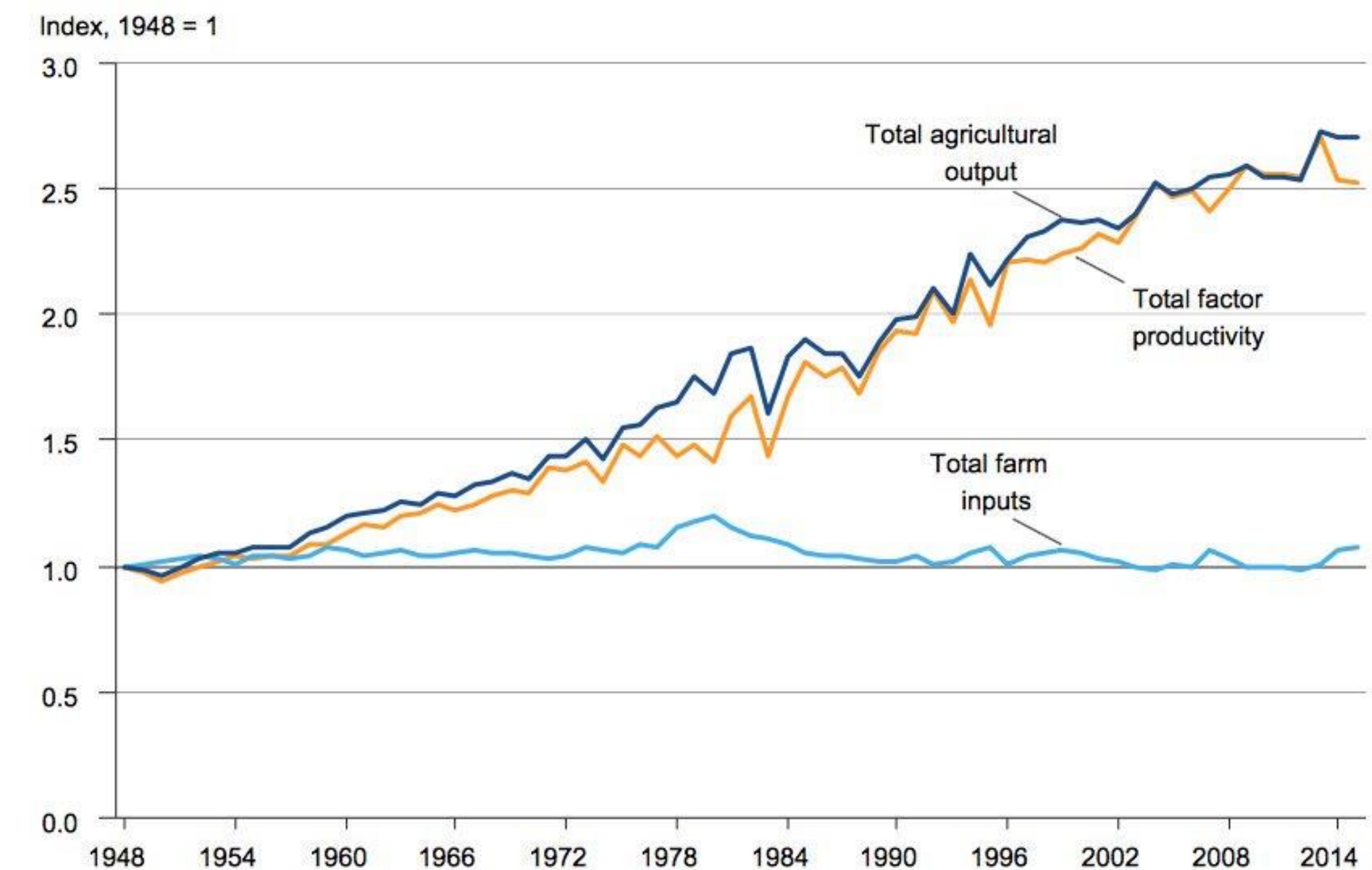
**What explains the large differences in living standards among countries and over time?**

The answer is countries' **productivity** i.e. the amount of goods and services produced from each hour of a worker's time.

**The relationship between productivity and living standards is fundamental but its implications are far-reaching**

To boost living standards, policy makers need **to raise productivity by ensuring that workers are well educated, have tools needed to produce goods and services, and have access to best available technology.**

U.S. agricultural output, inputs, and total factor productivity, 1948-2015



Source: USDA, Economic Research Service, Agricultural Productivity in the U.S. data series. Data as of October 2017.

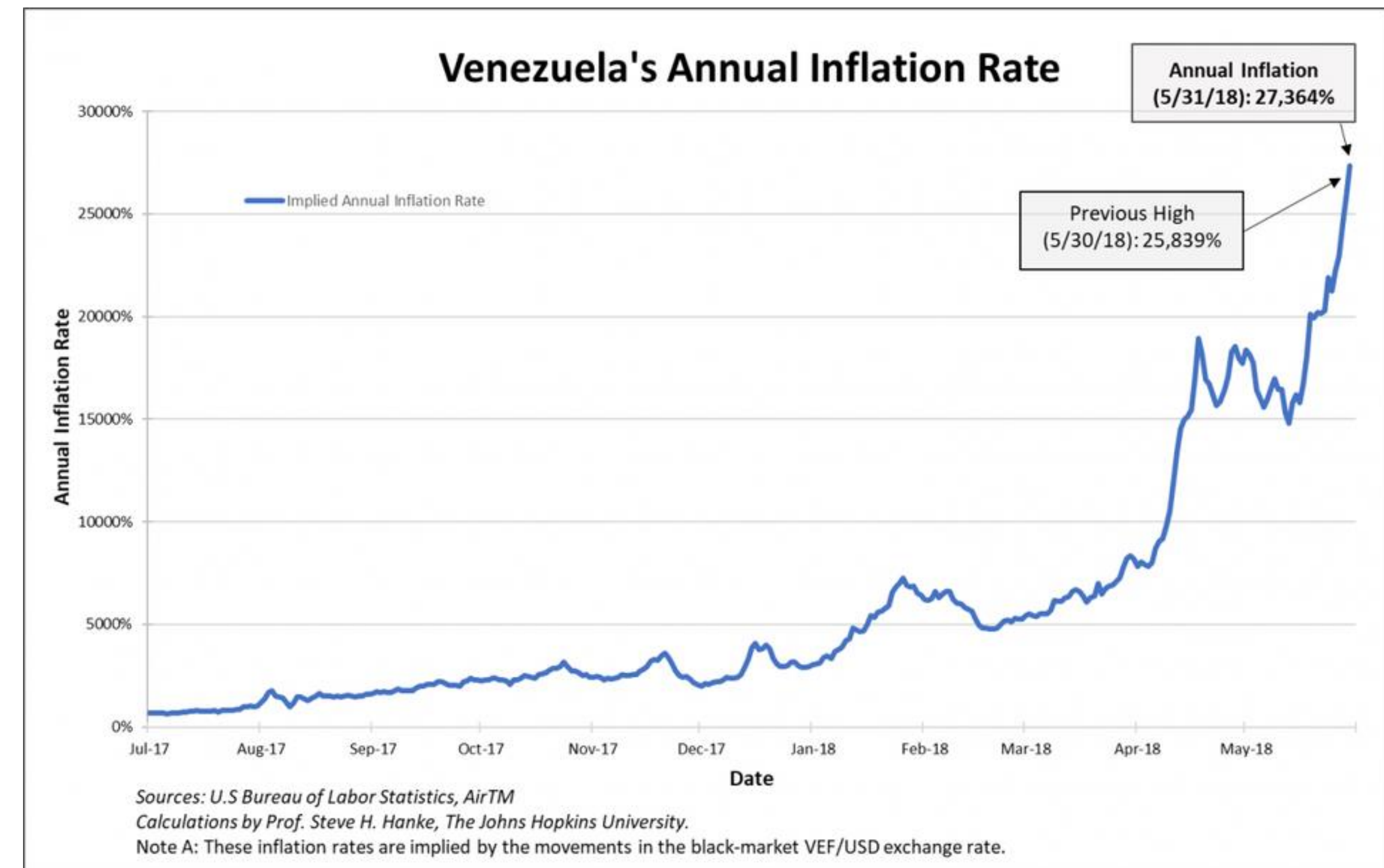
# Principle 9: Prices rise when the government prints too much money

In Germany in Jan. 1921, a daily newspaper cost 0.30 marks. Later in Nov. 1922, the same newspaper cost 70,000,000 marks. All other prices in the economy rose by similar amounts.

This is called “inflation”, an increase in the overall level of prices in the economy.

## What causes inflation?

“Growth in the quantity of money” When a government creates large quantities of the nation’s money, the value of the money falls.





# Venezuela's food crisis

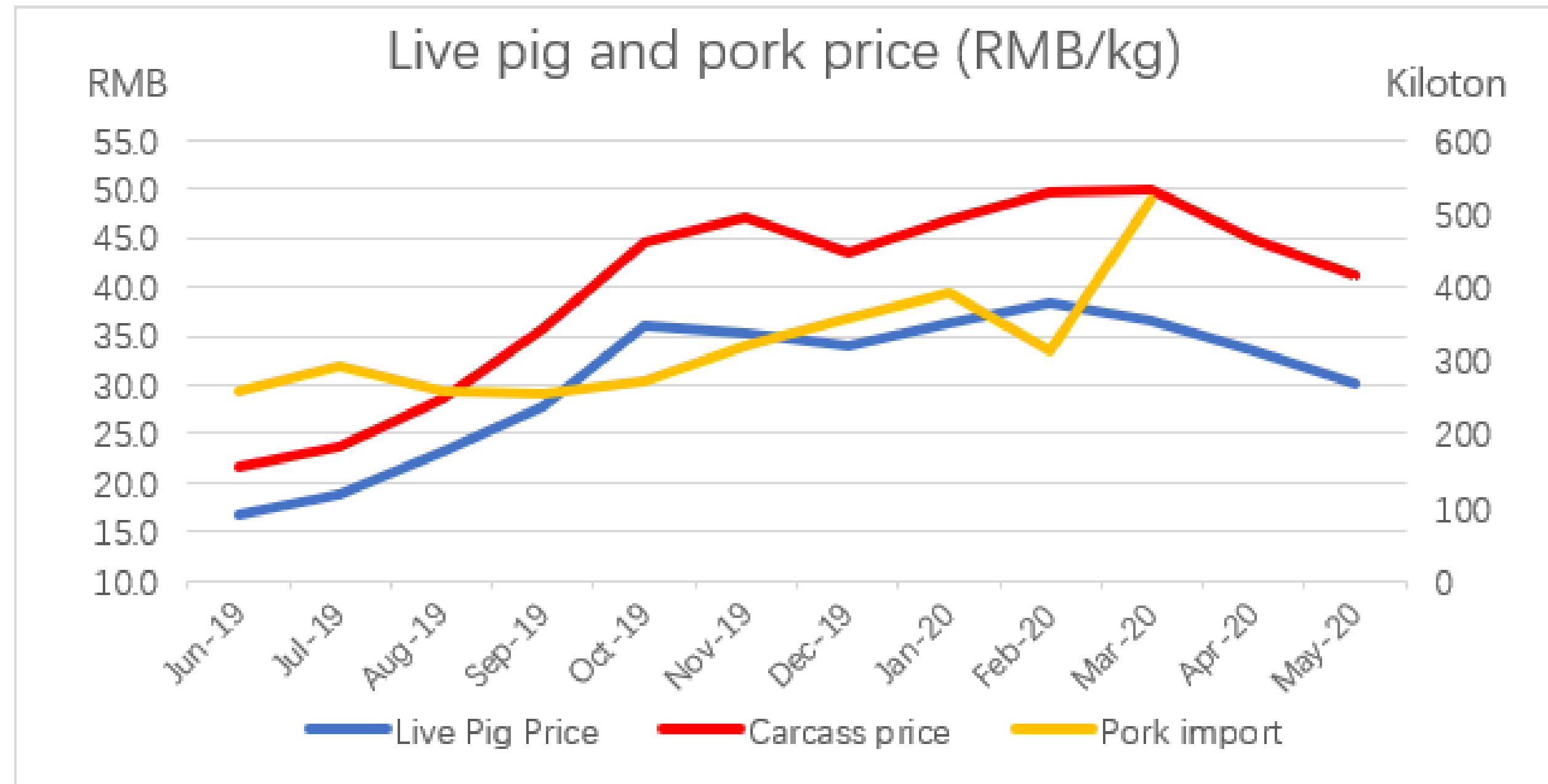


Image: Reuters/Carlos Garcia Rawlins

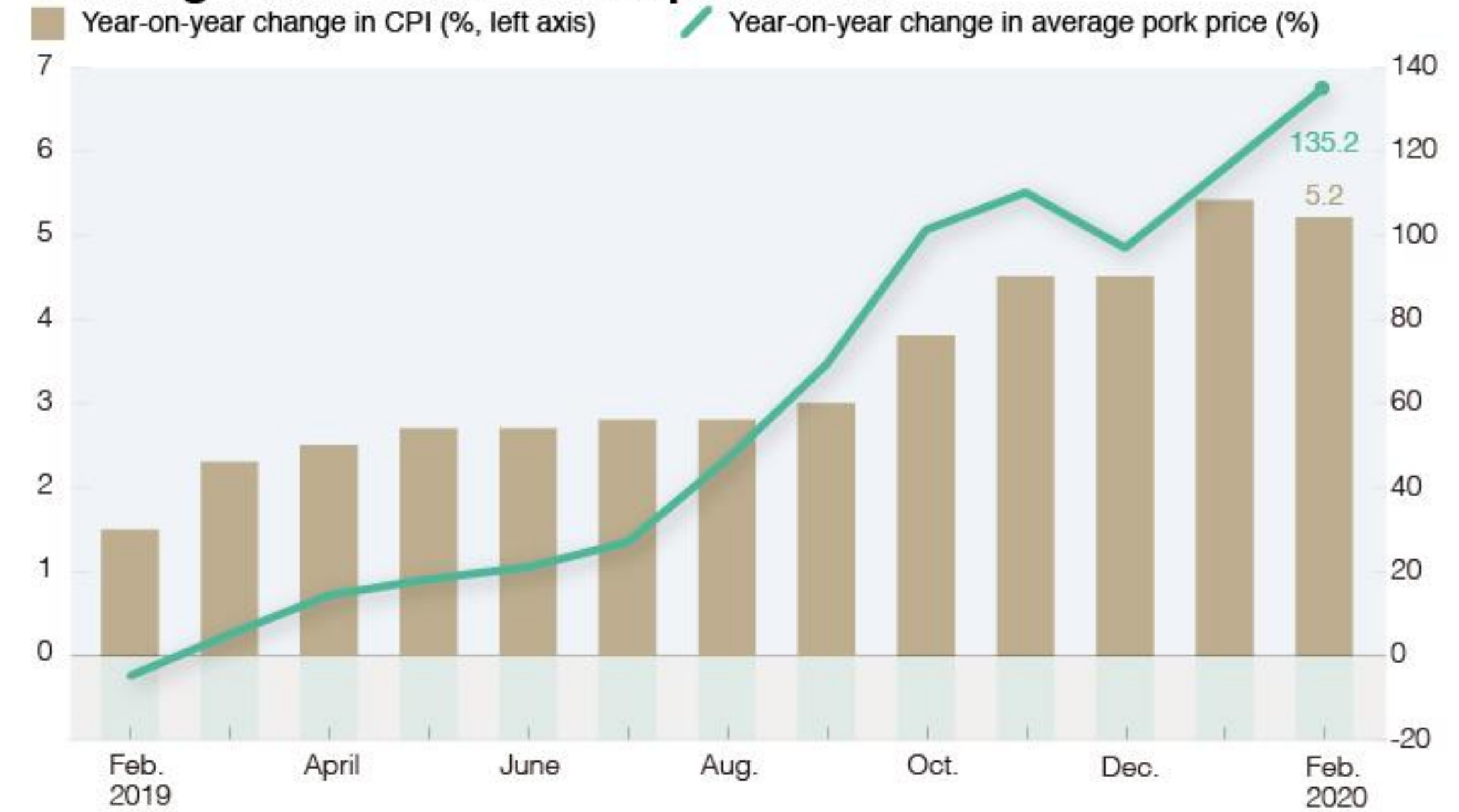
**A 2.4 kilogram chicken cost 14,600,000 bolivares (\$2.22) before Venezuela slashed five zeros from its currency.**

Source: <https://www.weforum.org/agenda/2018/08/the-stacks-of-cash-needed-to-buy-basic-goods-tell-venezuela-s-insane-inflation-story>

# The Impact of African Swine Fever in 2019-2020



## Soaring Pork Prices Drive Up Inflation



Sources: National Bureau of Statistics, CEIC

Caixin

According to the announcement of Shuanghui (Shineway), the company will invest 1.257 billion yuan (\$176 million) in a new pig farming project in Northeast China. (Lyle L. Jones, 27 May 2020)

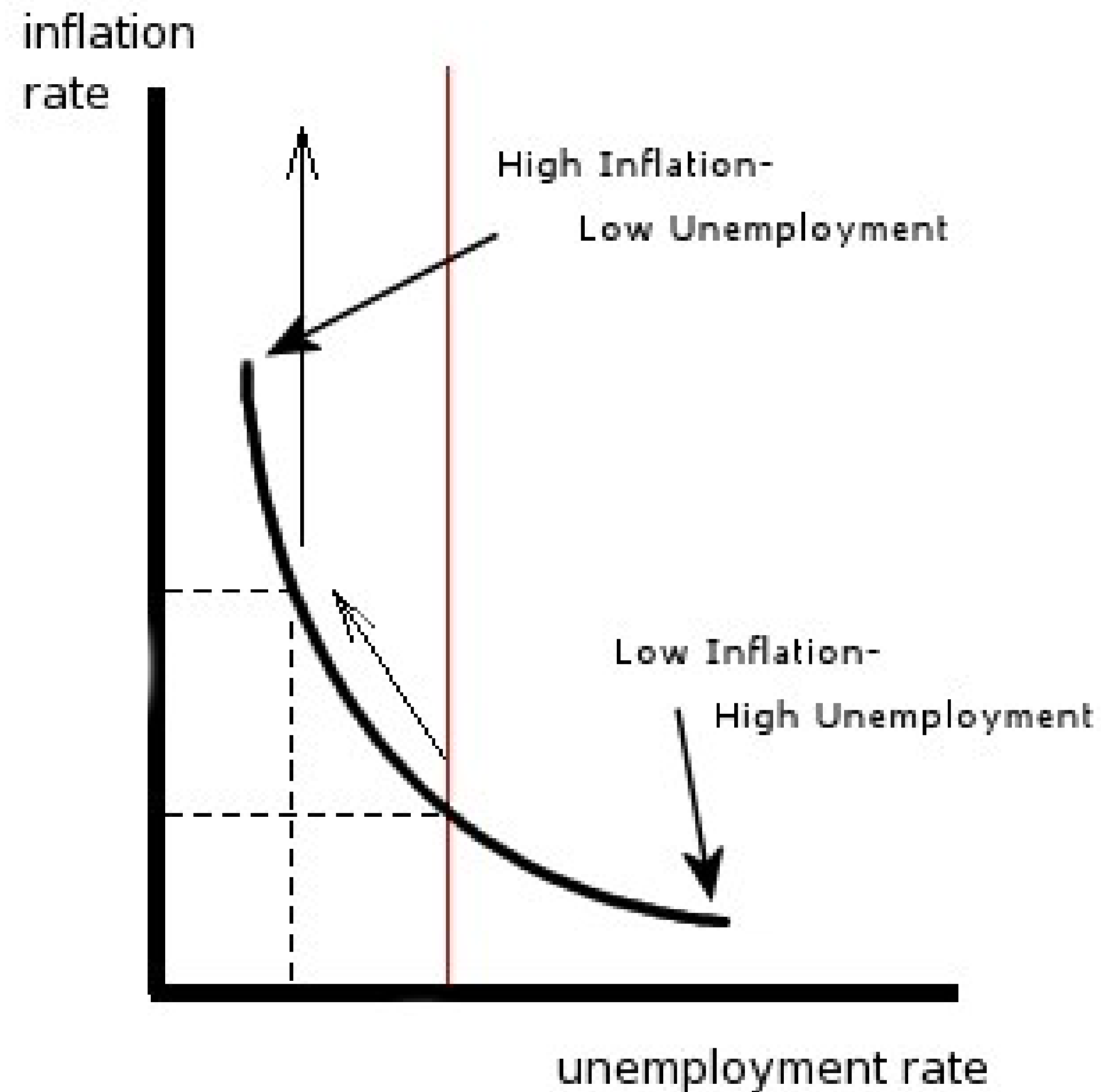
<https://www.caixinglobal.com/2020-03-23/falling-pork-prices-set-to-take-a-slice-out-of-inflation-in-china-101532791.html>

<https://www.swineweb.com/genesus-global-market-report-china-may-2020/>



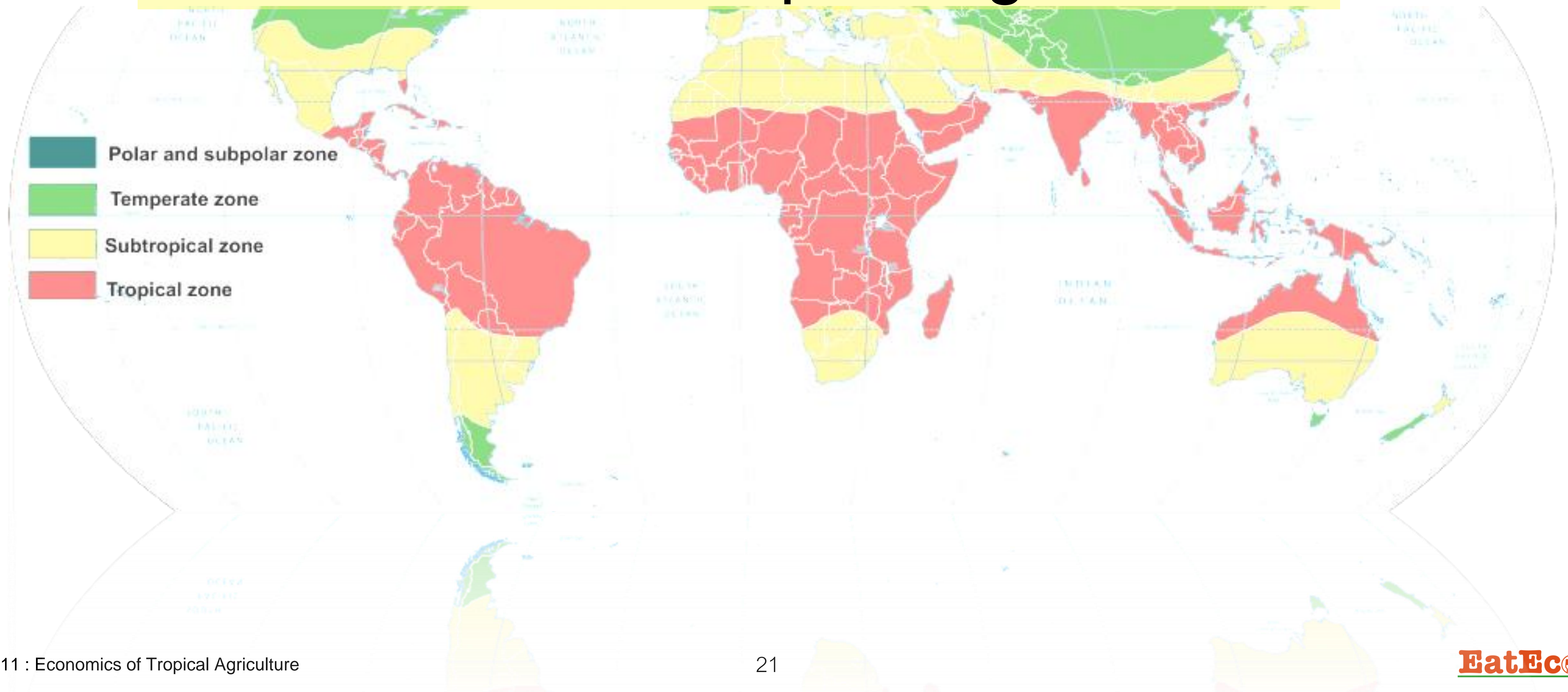
<https://www.bangkokbiznews.com/news/detail/889506>

# Principle 10: Society faces a short-run tradeoff between inflation and unemployment



- Reducing inflation is often caused a temporary rise in unemployment. This is called “Phillips curve”.
- Some prices are slow to adjust the inflation in the short-run.
- When the government reduces the quantity of money (reduce inflation), it reduces the amount that people spend. Lower spending, reduces the quantity of goods and services that firms sell. Lower sales, cause firms to lay off workers (raises unemployment).

What do we need to **think** when we talking about  
**ECONOMICS** of tropical agriculture?



# What do we **need to think** when we talking about **economics of tropical agriculture?**





- **Production**
  - **Cultivated area**
    - **Harvest area**
  - **Yield**
    - **Total yield**
    - **Average yield per area**
  - **Price at the farmer gate**
- **Market**
  - **Consumption**
    - **Food**
    - **Non-food**
  - **Trade**
    - **Export**
    - **Import**
  - **Price**

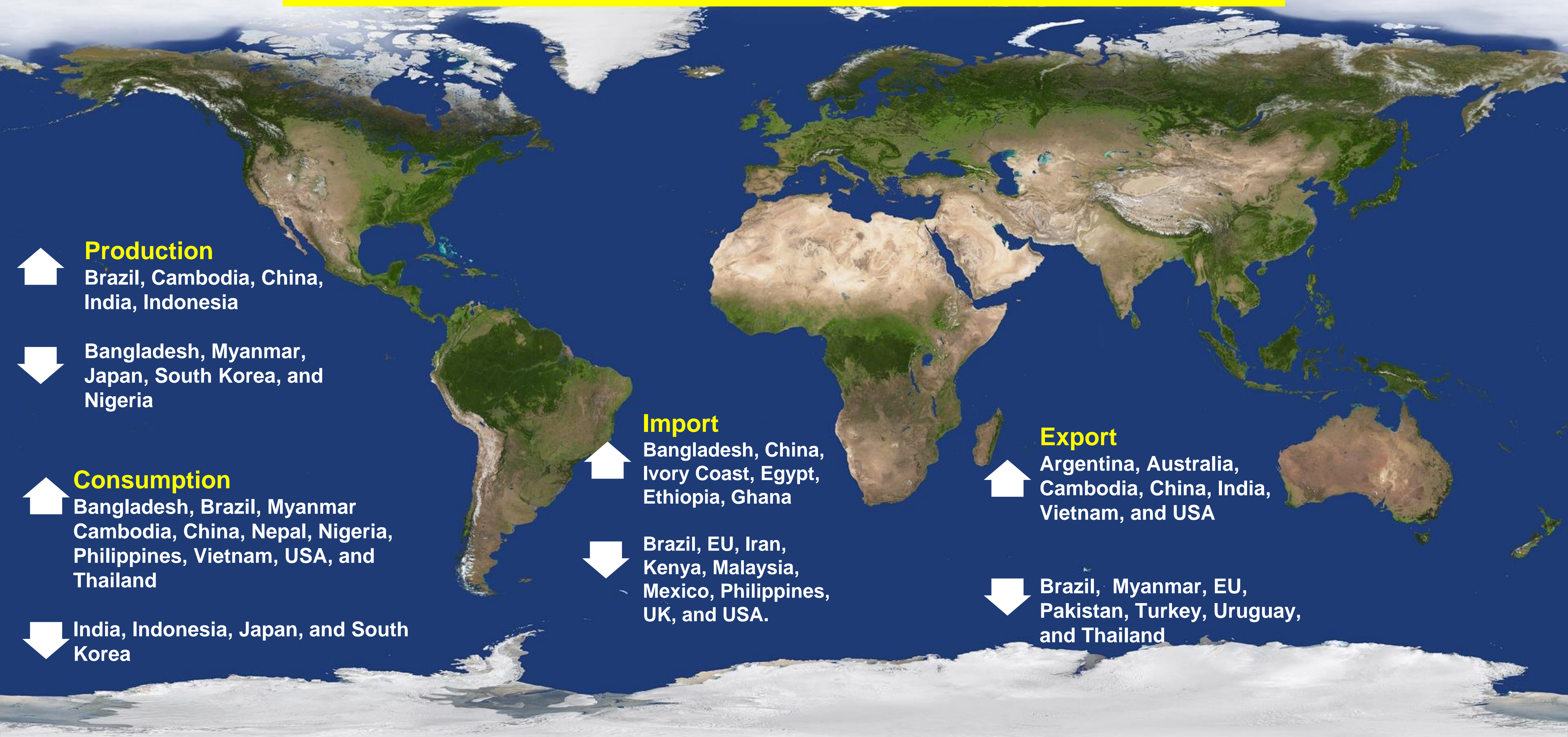
# Example : RICE



ภาพโดย [41330](#) จาก [Pixabay](#)



# Rice situation in 2021



## Production

↑ Brazil, Cambodia, China, India, Indonesia

↓ Bangladesh, Myanmar, Japan, South Korea, and Nigeria

## Consumption

↑ Bangladesh, Brazil, Myanmar, Cambodia, China, Nepal, Nigeria, Philippines, Vietnam, USA, and Thailand

↓ India, Indonesia, Japan, and South Korea

## Import

↑ Bangladesh, China, Ivory Coast, Egypt, Ethiopia, Ghana














↓ Brazil, EU, Iran, Kenya, Malaysia, Mexico, Philippines, UK, and USA.

## Export

↑ Argentina, Australia, Cambodia, China, India, Vietnam, and USA

↓ Brazil, Myanmar, EU, Pakistan, Turkey, Uruguay, and Thailand

# Trend in 2022

	World	Thailand In-season	Thailand Off-season
Area (Million Rai)	1032.94  0.22%	62.610  0.26%	10.30  19.31%
Yield (Million Ton)	Rice 511.72  0.87%	Paddy rice 26.02  1.53%	Paddy rice 6.60  21.47%
Yield (kg/Rai)	739  0.68%	423  1.65%	641  1.75%
Consumption (Million Ton)	Rice 511.27  1.93%	Paddy rice 17.69  3.51%	
Stock (Million Ton)	187.94  0.24%	Paddy rice 4.94  4.22%	

# Global Rice production

ประเทศ	ปี 2559/60	ปี 2560/61	ปี 2561/62	ปี 2562/63	ปี 2563/64 (2)	อัตราเพิ่ม ร้อยละ	ปี 2564/65 (1)	ผลต่างร้อยละ (1) และ (2)
<b>3</b> บังคลาเทศ	34.578	32.650	34.909	35.850	34.600	0.95	36.250	4.77
บราซิล	8.383	8.204	7.140	7.602	8.001	-1.68	8.024	0.29
เมียนมา	12.650	13.200	13.200	12.650	12.600	-0.50	12.600	0.00
กัมพูชา	5.256	5.554	5.742	5.740	5.783	2.27	5.900	2.02
<b>1</b> จีน	147.766	148.873	148.490	146.730	148.300	-0.07	149.000	0.47
<b>2</b> อินเดีย	109.698	112.760	116.480	118.870	122.270	2.73	125.000	2.23
อินโดนีเซีย	36.858	37.000	34.200	34.700	35.300	-1.49	35.350	0.14
ญี่ปุ่น	7.929	7.787	7.657	7.611	7.573	-1.14	7.560	-0.17
เกาหลีใต้	4.197	3.972	3.868	3.744	3.507	-3.98	3.816	8.81
เนปาล		3.431	3.736	3.696	3.696	2.15	3.700	0.11
ไนจีเรีย	4.536	4.470	4.538	5.040	4.890	2.74	5.000	2.25
ปากีสถาน	6.849	7.450	7.202	7.414	8.184	3.58	8.200	0.20
ฟิลิปปินส์	11.686	12.235	11.732	11.927	12.416	0.96	12.300	-0.93
เวียดนาม	27.400	27.657	27.344	27.100	27.438	-0.18	27.100	-1.23
สหรัฐอเมริกา	7.117	5.659	7.107	5.877	7.226	0.68	6.154	-14.84
ไทย	19.200	20.577	20.340	17.655	18.863	-1.87	19.500	3.38
อื่น ๆ	47.490	43.511	44.116	46.704	46.653	0.35	46.266	-0.83
รวม	491.593	494.990	497.801	498.910	507.300	0.80	511.720	0.87

ที่มา: Rice, World Markets and Trade. USDA Foreign Agricultural Service, November 2021

Unit : Million Ton

Rice, World Markets and Trade. USDA Foreign Agricultural Service, October 2019

# Rice Balance sheet in 2017 - 2022

หน่วย: ล้านตันข้าวสาร

ประเทศ	ปี 2559/60	ปี 2560/61	ปี 2561/62	ปี 2562/63	ปี 2563/64 (2)	อัตราเพิ่ม ร้อยละ	ปี 2564/65 (1)	ผลต่างร้อยละ (1) และ (2)
สต็อกต้นปี	135.048	150.422	163.737	176.609	181.774	<b>7.84</b>	187.486	3.14
ผลผลิต	491.593	494.990	497.801	498.910	507.300	<b>0.71</b>	511.720	0.87
นำเข้า	48.504	48.297	43.924	45.234	49.345	<b>-0.31</b>	48.699	-1.31
ใช้บริโภค	483.788	481.678	484.929	493.745	501.588	<b>0.97</b>	511.265	1.93
ส่งออก	48.504	48.297	43.924	45.234	49.346	<b>-0.31</b>	48.669	-1.37
สต็อกปลายปี	150.422	163.737	176.609	181.774	187.486	<b>5.60</b>	187.941	0.24

ที่มา: Rice, World Markets and Trade. USDA Foreign Agricultural Service, November 2021

# Global Rice Stock at the End in 2016/17 – 2021/22

หน่วย: ล้านตันข้าวสาร

ประเทศ	ปี 2559/60	ปี 2560/61	ปี 2561/62	ปี 2562/63	ปี 2563/64 (2)	อัตราเพิ่ม ร้อยละ	ปี 2564/65 (1)	ผลต่าง ร้อยละ (1) และ (2)
บังคลาเทศ		1.500	1.405	1.571	1.467	0.45	2.213	50.85
จีน	98.500	109.000	115.000	116.500	116.500	4.10	113.000	-3.00
อินเดีย	20.550	22.600	29.500	33.900	36.000	16.49	38.500	6.94
อินโดนีเซีย	3.215	5.563	4.063	3.313	3.411	-3.92	3.761	10.26
ฟิลิปปินส์	2.003	2.288	3.520	3.597	3.763	18.69	3.713	-1.33
เวียดนาม		1.034	1.097	1.180	2.568	32.34	2.418	-5.84
สหรัฐอเมริกา	1.462	0.933	1.424	0.910	1.387	-1.29	1.111	-19.90
ไทย	4.238	2.852	4.080	3.979	4.742	5.74	4.942	4.22
อื่น ๆ	20.454	17.967	16.520	16.824	17.648	-3.54	18.283	3.60
รวม	150.422	163.737	176.609	181.774	187.486	5.60	187.941	0.24

ที่มา: Rice, World Markets and Trade. USDA Foreign Agricultural Service, November 2021

# Rice Market Share

ประเทศ	ปี 2562/63		ปี 2563/64		ปี 2564/65	
	ปริมาณ	ส่วนแบ่งตลาด	ปริมาณ	ส่วนแบ่งตลาด	ปริมาณ	ส่วนแบ่งตลาด
อาร์เจนตินา	0.335	0.74	0.360	0.73	0.350	0.72
ออสเตรเลีย	0.042	0.09	0.060	0.12	0.260	0.53
บราซิล	1.240	2.74	0.800	1.62	1.050	2.16
เมียนมา	2.300	5.08	1.650	3.34	1.800	3.70
กัมพูชา	1.350	2.98	1.700	3.45	1.400	2.88
จีน	2.265	5.01	2.300	4.66	2.100	4.31
สหภาพยุโรป	0.506	1.12	0.450	0.91	0.475	0.98
กายานา	0.520	1.15	0.470	0.95	0.470	0.97
อินเดีย <b>1</b>	14.577	32.23	20.000	40.53	18.000	36.98
ปากีสถาน	3.934	8.70	3.900	7.90	4.000	8.22
พารากวัย	0.803	1.78	0.600	1.22	0.700	1.44
ตุรกี	0.234	0.52	0.215	0.44	0.220	0.45
อุรุกวัย	0.967	2.14	0.760	1.54	0.850	1.75
เวียดนาม <b>3</b>	6.167	13.63	6.200	12.56	6.400	13.15
สหรัฐอเมริกา	2.858	6.32	2.950	5.98	2.850	5.86
ไทย <b>2</b>	5.706	12.61	5.600	11.35	6.500	13.36
อื่น ๆ	1.430	3.16	1.331	2.70	1.244	2.56
รวม	45.234	100.00	49.346	100.00	48.669	100.00

Unit  
Quantity : Million Ton  
Share : Percent

Source : Rice, World Markets and Trade. USDA Foreign Agricultural Service, October 2019

# Demand and Supply of Thai rice in 2017-2022

หน่วย: ล้านตันข้าวเปลือก

รายการ	ปี 2560 (ปี 2559/60)	ปี 2561 (ปี 2560/61)	ปี 2562 (ปี 2561/62)	ปี 2563 (ปี 2562/63)	ปี 2564 (ปี 2563/64) (2)	อัตราเพิ่ม ร้อยละ	ปี 2565 (ปี 2564/65) (1)	ผลต่าง ร้อยละ (1) และ (2)
ผลผลิต	27.17	29.50	34.99	34.16	30.87	4.10	29.19	-5.44
ความต้องการใช้	15.32	15.65	17.11	17.10	17.09	3.12	17.69	3.51
การส่งออก	13.63	15.52	16.92	15.38	11.69	-3.11	9.23	-21.04
	(9.00)	(10.24)	(11.00)	(10.00)	(7.60)		(6.00)	

หมายเหตุ: ( ) หน่วยล้านตันข้าวสาร

อัตราแปรสภาพข้าวเปลือกเป็นข้าวสาร 1 : 0.65

ที่มา: แผนการผลิตและการตลาดข้าวครบวงจร ปีการผลิต 2559/60 - 2564/65

# Rice production

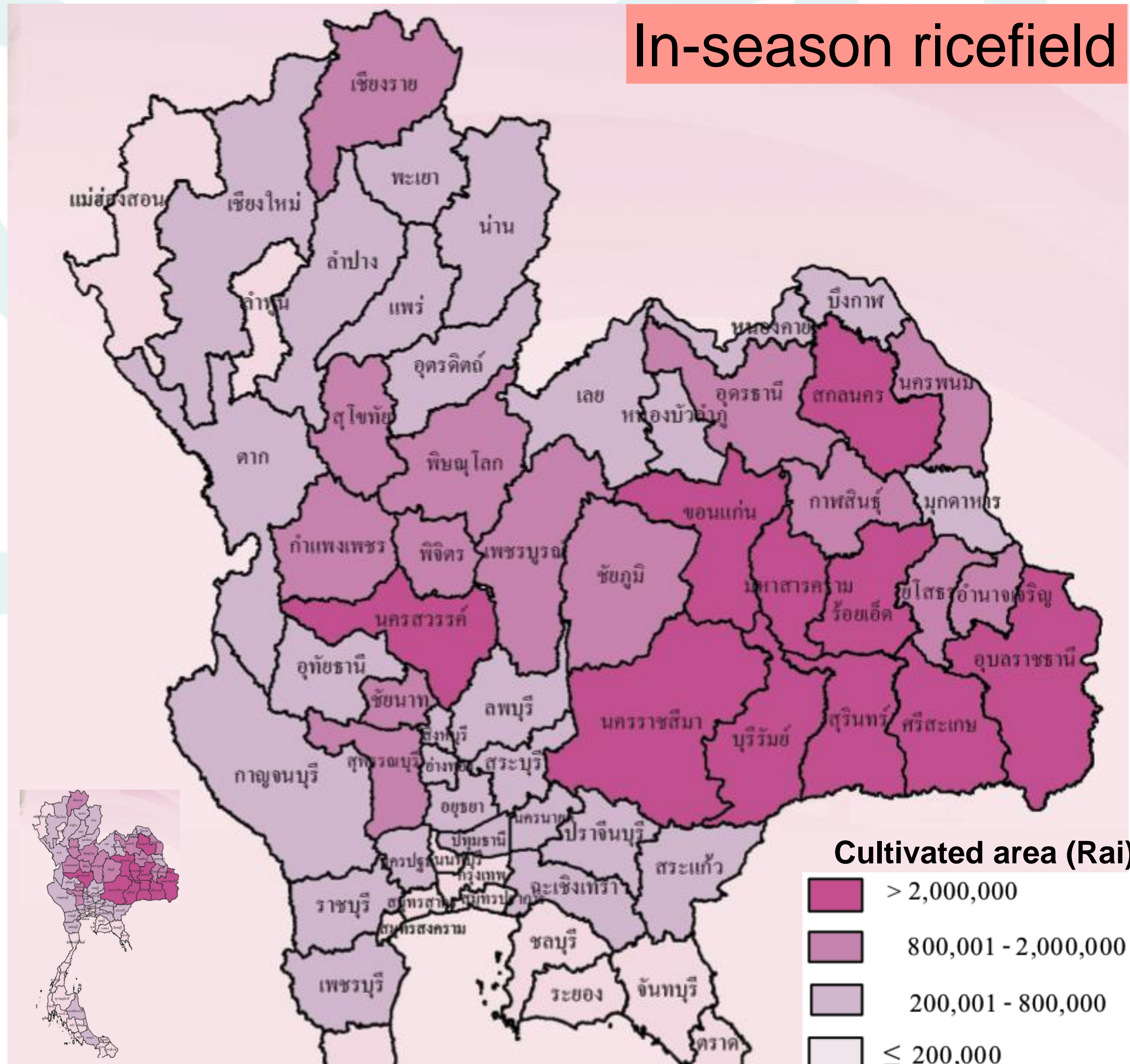
รายการ	ปี 2560 (ปี2559/60)	ปี 2561 (ปี2560/61)	ปี 2562 (ปี2561/62)	ปี 2563 (ปี2562/63)	ปี 2564 (ปี2563/64) (2)	อัตราเพิ่ม ร้อยละ	ปี 2565 (ปี2564/65)* (1)	ผลต่าง ร้อยละ (1) และ (2)
<b>ข้าวนาปี</b>								
- เนื้อที่เพาะปลูก (ล้านไร่)	58.645	59.221	59.981	61.197	62.438	<b>1.59</b>	62.600	0.26
- ผลผลิต (ล้านตัน)	25.236	24.934	25.178	24.064	26.424	<b>0.57</b>	26.019	-1.53
- ผลผลิตต่อไร่ (ก.ก.)	430	421	420	393	423	<b>-1.01</b>	416	-1.65
<b>ข้าวนาปรัง</b>								
- เนื้อที่เพาะปลูก (ล้านไร่)	10.457	12.067	10.995	7.342	8.631	<b>-8.43</b>	10.298	19.31
- ผลผลิต (ล้านตัน)	6.621	7.965	7.170	4.554	5.435	<b>-9.10</b>	6.602	21.47
- ผลผลิตต่อไร่ (ก.ก.)	633	660	652	620	630	<b>-0.72</b>	641	1.75
<b>ข้าวมรวม</b>								
- เนื้อที่เพาะปลูก (ล้านไร่)	69.102	71.288	70.976	68.539	71.069	<b>0.17</b>	72.898	2.57
- ผลผลิต (ล้านตัน)	31.857	32.899	32.348	28.618	31.859	<b>-1.38</b>	32.621	2.39
- ผลผลิตต่อไร่ (ก.ก.)	461	461	456	418	448	<b>-1.55</b>	447	3.44

หมายเหตุ: \* ประมาณการ  
ที่มา: สำนักงานเศรษฐกิจการเกษตร

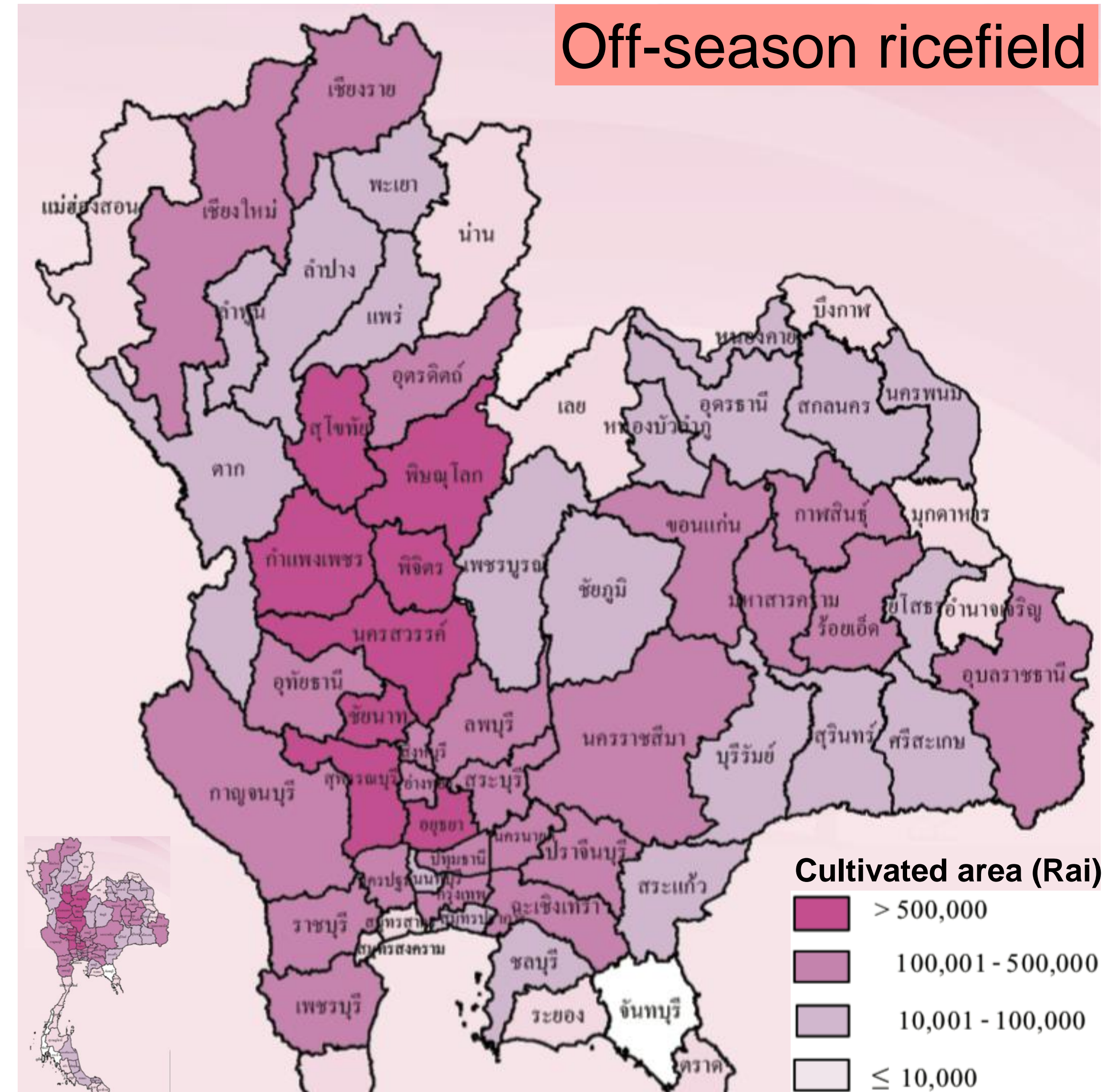


# Rice

In-season ricefield



Off-season ricefield



Source: <http://www.oae.go.th/assets/portals/1/files/ebook/2562/commodity2561.pdf>

# Rice: Price at the farm gate and F.O.B in 2017-2021

ปี	ข้าวหอมมะลิ			ข้าวขาว			ข้าวเหนียวเมล็ดยาว		
	เกษตรกร	ส่งออก เอฟ.โอ.บี <sup>1/</sup>		เกษตรกร <sup>2/</sup>	ส่งออก เอฟ.โอ.บี <sup>3/</sup>		เกษตรกร <sup>4/</sup>	ส่งออก เอฟ.โอ.บี <sup>5/</sup>	
	(บาท/ตัน)	(\$/ตัน)	(บาท/ตัน)	(บาท/ตัน)	(\$/ตัน)	(บาท/ตัน)	(บาท/ตัน)	(\$/ตัน)	(บาท/ตัน)
2560	11,433	811	27,186	7,905	403	13,597	9,156	706	23,868
2561	15,199	1,136	36,413	7,892	420	13,466	9,834	707	22,654
2562	14,282	1,159	35,652	7,812	418	12,850	13,863	1,111	34,077
2563	10,916	1,009	31,342	8,600	500	15,525	10,648	1,054	32,178
2564 <sup>6/</sup>	9,600	760	24,700	7,850	460	14,950	7,600	685	22,263
<b>อัตราเพิ่ม (ร้อยละ)</b>	<b>-6.58</b>	<b>-2.45</b>	<b>-3.36</b>	<b>0.72</b>	<b>4.49</b>	<b>3.38</b>	<b>-2.89</b>	<b>3.45</b>	<b>2.14</b>

หมายเหตุ: <sup>1/</sup> ราคาส่งออก เอฟ.โอ.บี ข้าวหอมมะลิ 100% (ใหม่) <sup>2/</sup> ราคาข้าวเปลือกเจ้าความชื้น 15% ที่เกษตรกรขายได้

<sup>3/</sup> ราคาส่งออก เอฟ.โอ.บี ข้าว 5% <sup>4/</sup> ราคาข้าวเปลือกเหนียวนาปีเมล็ดยาวที่เกษตรกรขายได้

<sup>5/</sup> ราคาส่งออก เอฟ.โอ.บี ข้าวเหนียวเมล็ดยาว 10% <sup>6/</sup> ประมาณการ

ที่มา: สำนักงานเศรษฐกิจการเกษตร

# What do Factors Influence Rice exporters?



Political issues



Rice stock

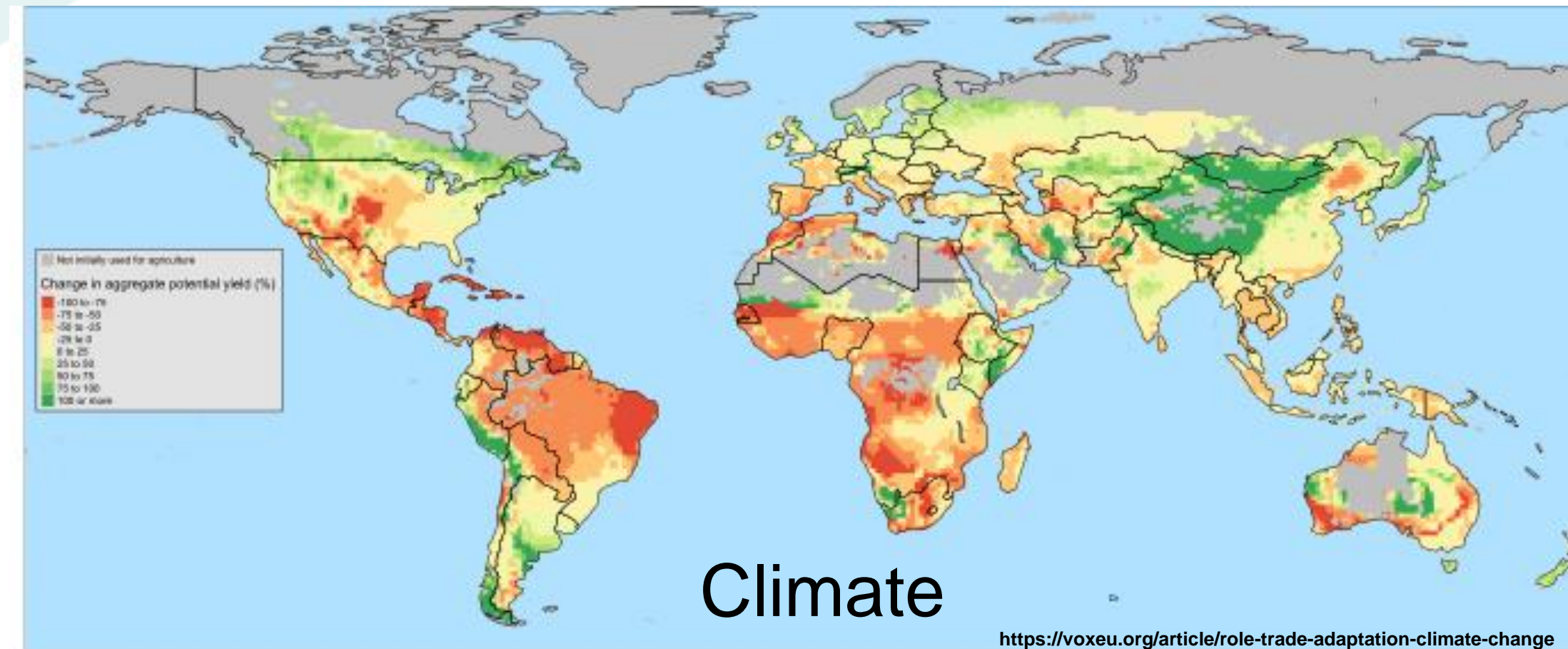
Exchange Rate

SCB Siam Commercial Bank Effective: 06/08/2020 08:23

Currency	Buying	Selling
USD1-2	29.71	31.16
USD5-20	30.07	31.18
USD50-1...	30.55	31.25
EUR	36.17000	37.25500
GBP	39.82125	41.46500
JPY	28.755	29.820
AED	7.10000	9.40000
AUD	21.65750	22.99000
BHD	62.70000	89.63000

Rates Compare Convert Banks Setting

Exchange rate

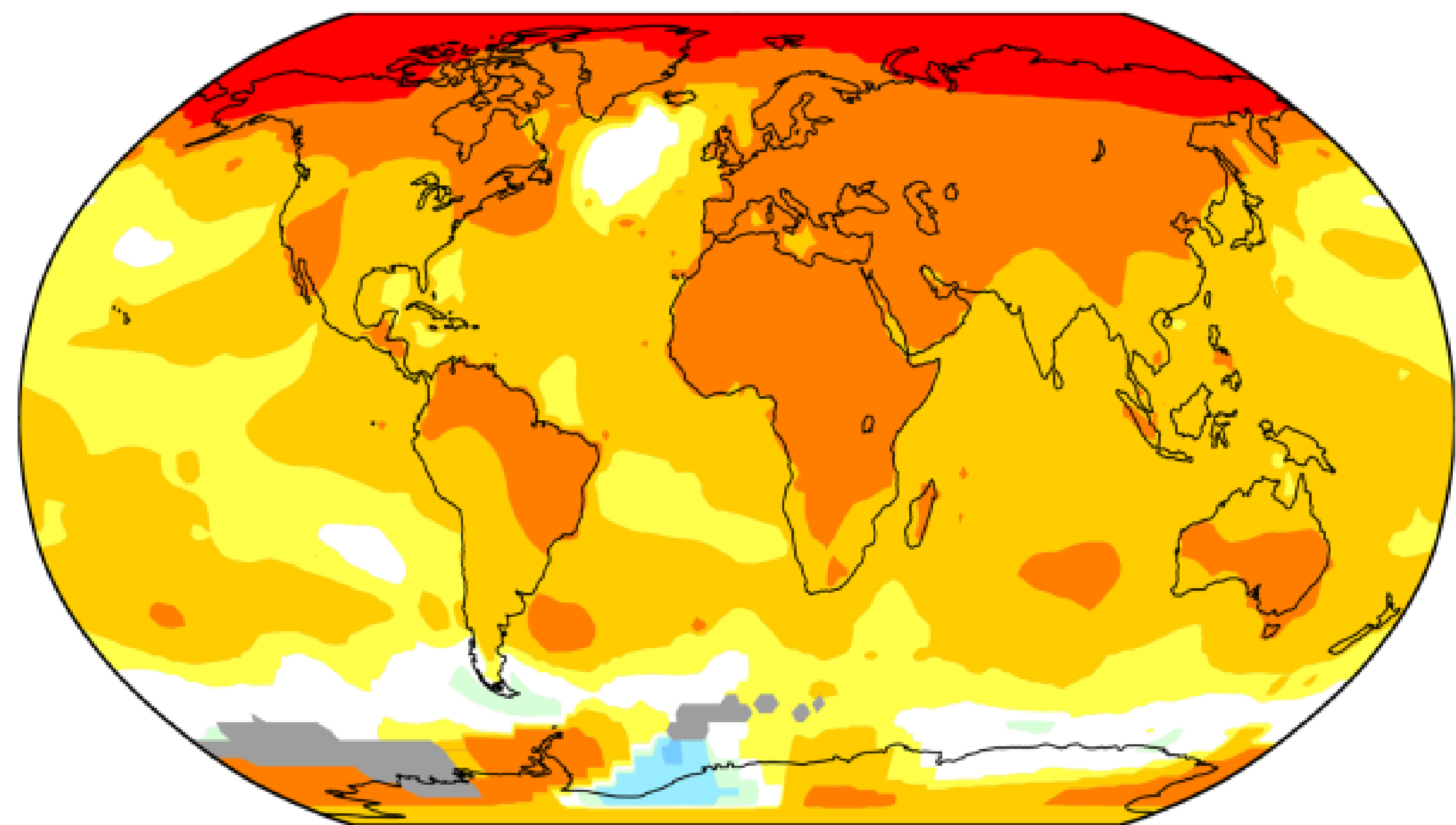


Climate

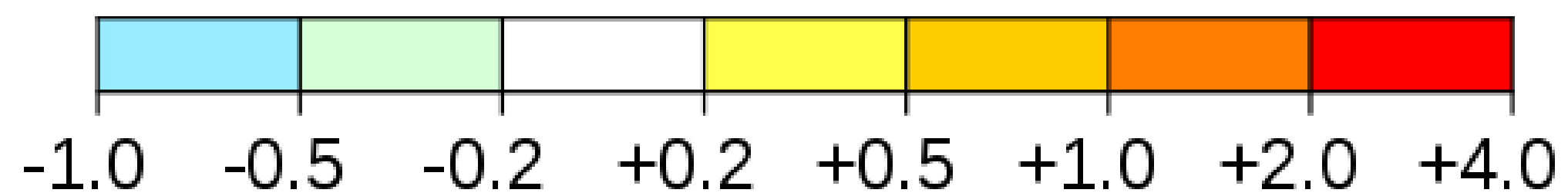
- Rice Policy
- Consumption trend
- Pest and plant diseases
- Logistics

# Global warming

Temperature change in the last 50 years



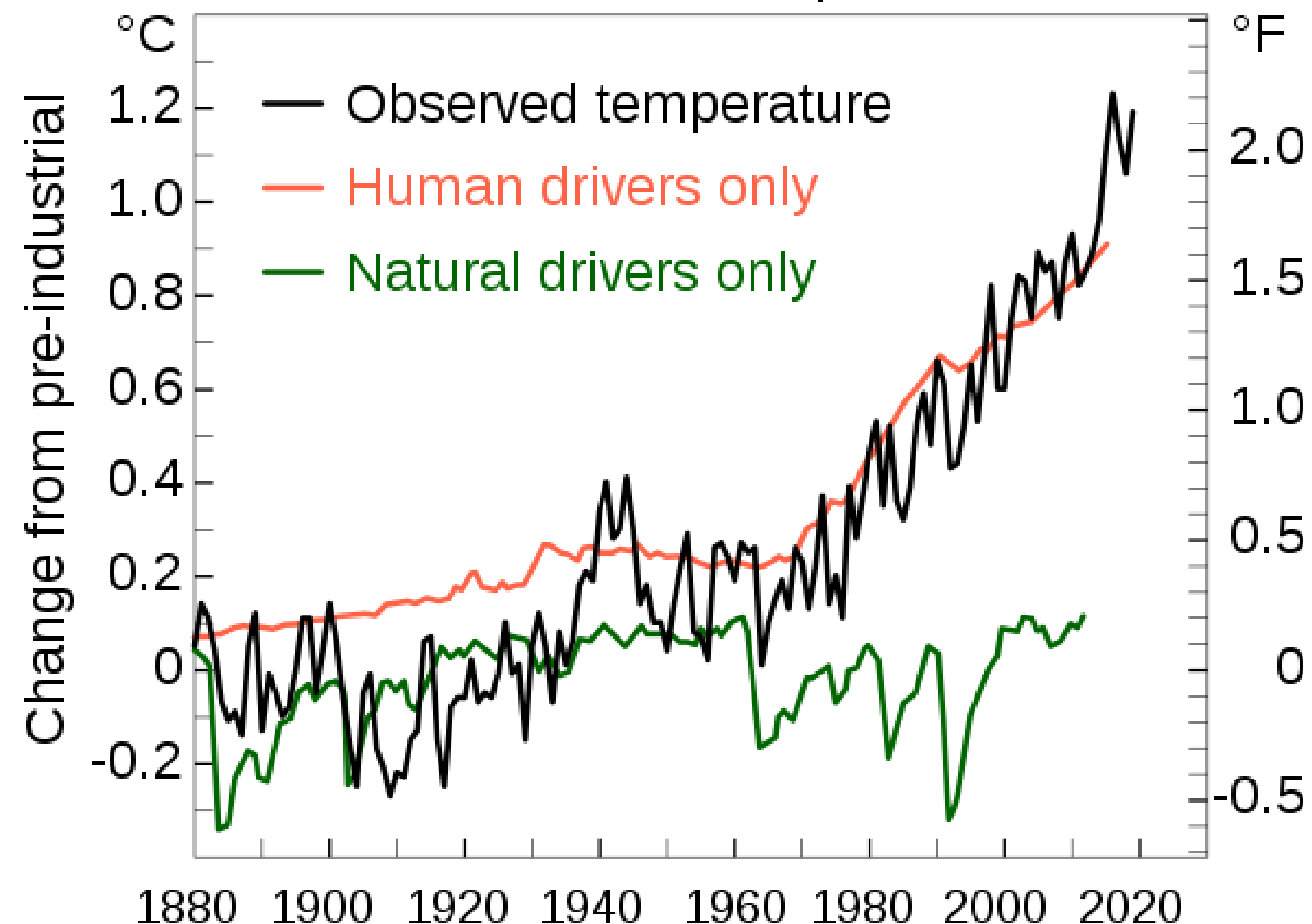
2010-2019 average vs 1951-1978 baseline (°C)



Average global temperatures from 2010 to 2019 compared to a baseline average from 1951 to 1978. Source: [NASA](https://www.nasa.gov).

Source: [https://en.wikipedia.org/wiki/Global\\_warming](https://en.wikipedia.org/wiki/Global_warming)

Global surface temperature



Observed temperature from NASA<sup>[2]</sup> vs the 1850–1900 average as a pre-industrial baseline. The primary driver for increased global temperatures in the industrial era is human activity, with natural forces adding variability.<sup>[3]</sup>

# Hainan Durians Are Almost Here: To Hit Market in 2024



The durian planting area in Hainan province now exceeds 2,000 hectares (12,500 rai) and Hainanese durians are forecast to hit the market in batches in 2024, with an expected annual supply of 45,000–75,000 tons

Source: <https://www.tropicalhainan.com/hainan-durians-are-almost-here-to-hit-market-in-2024/>

# Agricultural production calendar, crop year 2022/2023

ชนิดสินค้า	ปี 2565												ปี 2566												ผลผลิต (ตัน)
	ม.ค.	ก.พ.	มี.ค.	เม.ย.	พ.ค.	มิ.ย.	ก.ค.	ส.ค.	ก.ย.	ต.ค.	พ.ย.	ธ.ค.	ม.ค.	ก.พ.	มี.ค.	เม.ย.	พ.ค.	มิ.ย.	ก.ค.	ส.ค.	ก.ย.	ต.ค.	พ.ย.	ธ.ค.	
ข้าวห่าปี						0.03	6.59	7.36	8.35	65.42	8.89	2.18	0.71	0.17	0.24	0.06									26,922,492
ข้าวนาปรัง		13.09	28.44	27.78	17.01	7.46	4.88	1.03	0.25	0.06															7,212,577
ข้าวโพดเลี้ยงสัตว์						0.04	1.14	3.25	11.50	21.56	31.62	17.09	2.59	0.87	3.79	5.42	1.13								4,961,357
มันสำปะหลัง โรงงาน													4.20	5.72	9.65	18.45	21.70	18.83	8.05	4.14	2.35	1.76	2.20	2.95	35,799,936
สับปะรดโรงงาน	7.07	9.83	9.88	9.65	12.53	11.45	6.40	3.97	4.98	7.62	10.30	6.33													1,756,063
ถั่วเหลือง							0.66	5.32	17.86	8.92	1.65	0.05	2.23	30.38	32.02	0.91									22,993
หอมแดง						3.03	5.55	3.16	3.89	1.34	3.61	19.02	43.00	13.90	3.27	0.23									169,855
หอมหัวใหญ่										9.56	1.22	34.59	42.97	11.66											31,733
กระเทียม												3.05	13.28	68.03	15.64										63,904
มันฝรั่ง						0.77	1.71	3.21	1.23	0.18	1.74	1.62	15.47	44.28	29.37	0.42									121,345
ยางพารา	11.59	7.51	2.90	1.30	5.03	8.00	9.15	9.62	9.84	10.20	11.60	13.26													4,872,373
ปาล์มน้ำมัน	5.45	6.86	10.44	10.16	9.65	9.54	8.96	8.66	7.53	8.00	8.24	6.51													17,461,219
มะพร้าวผลแก่ (1,000 ผล)	6.85	7.45	7.76	8.94	9.91	10.82	10.54	9.74	7.22	6.65	6.64	7.48													692,298
กาแฟ										1.89	5.74	12.19	36.83	24.25	18.37	0.73	0.01								20,569
ลำไย	10.33	5.74	3.13	1.59	0.89	3.13	13.10	23.88	10.04	7.39	8.32	12.46													1,655,367
ทุเรียน	0.98	0.22	1.46	11.33	30.58	24.65	14.00	6.02	1.78	4.14	2.36	2.48													1,263,363
เงาะ	0.01		0.04	3.58	41.27	30.70	15.87	5.39	2.53	0.51	0.07	0.03													280,420
มังคุด	0.21		0.01	10.57	42.49	24.69	10.71	5.17	4.72	1.08	0.15	0.20													283,356
ลองกอง	0.04	0.01		0.26	4.04	14.27	17.79	13.27	28.62	19.82	1.88													47,168	
ลิ้นจี่			0.94	6.34	58.98	33.59	0.13	0.02																	47,290

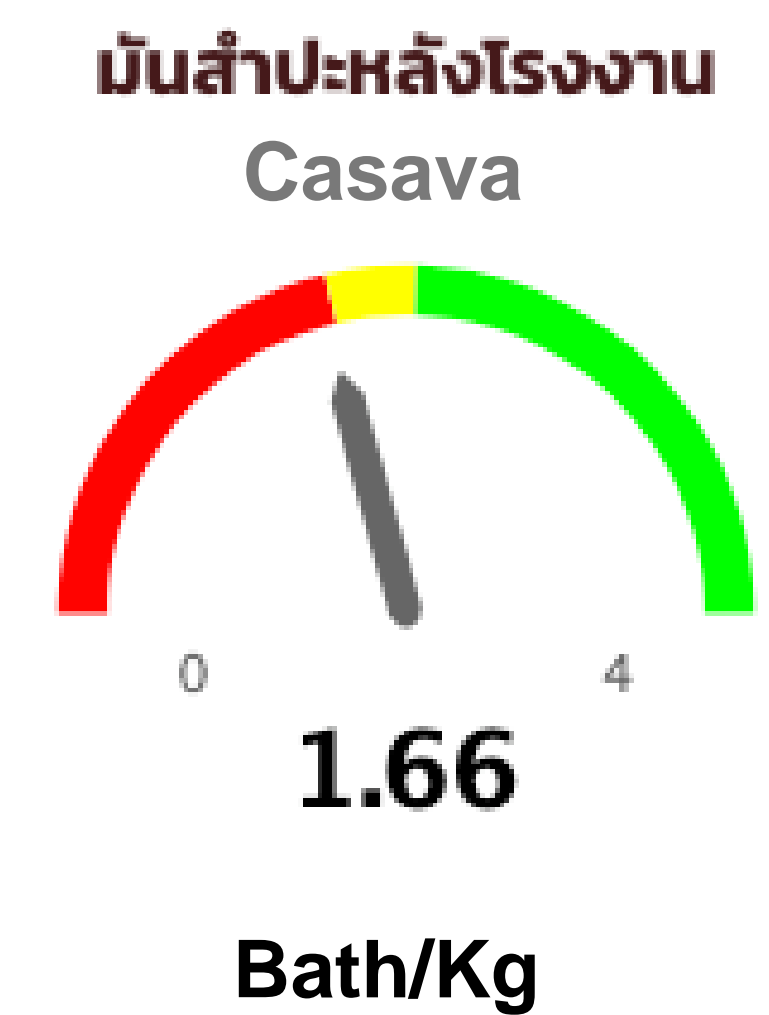
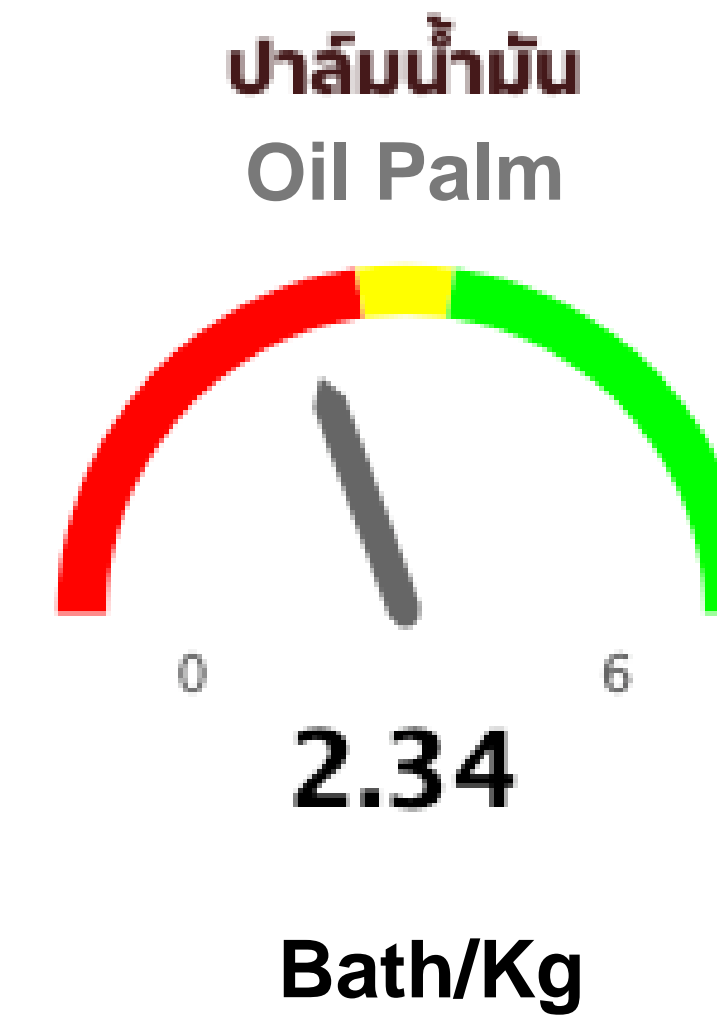
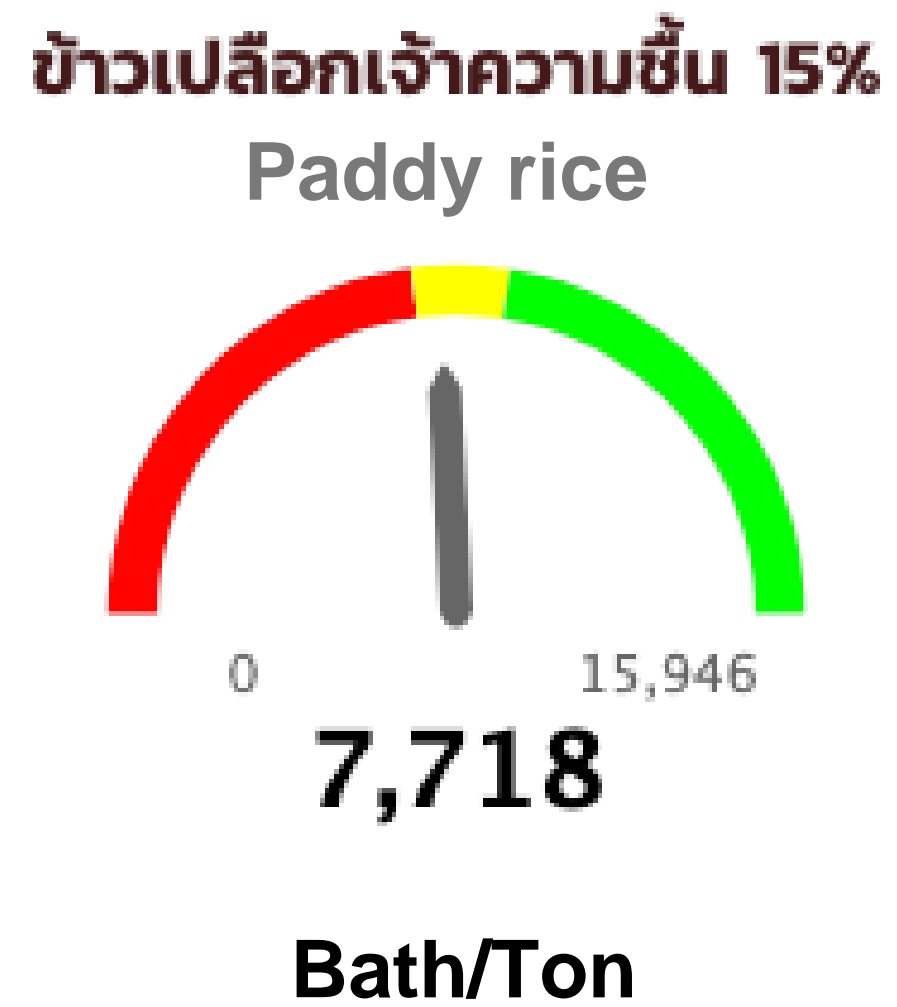
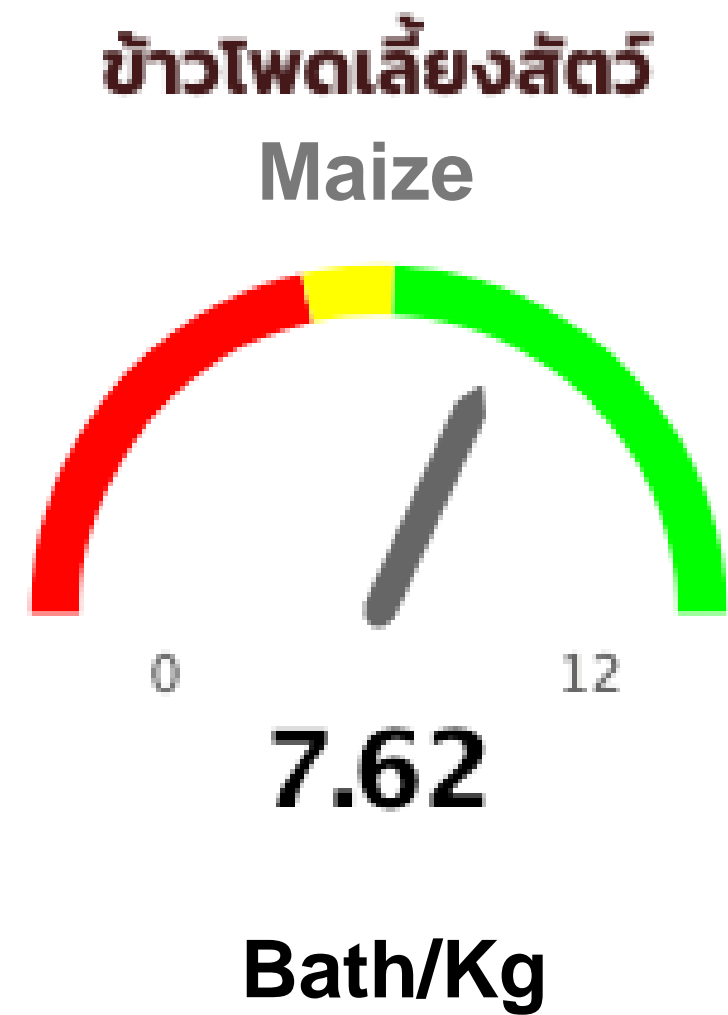
Unit: Percentage

<http://www.oae.go.th/assets/portals/1/files/ebook/calendar.pdf>

# What can **GOVERNMENTS** do to...

- improve the **market outcomes**?
- improve the **farm-household's well-being**?

# Monitoring the market



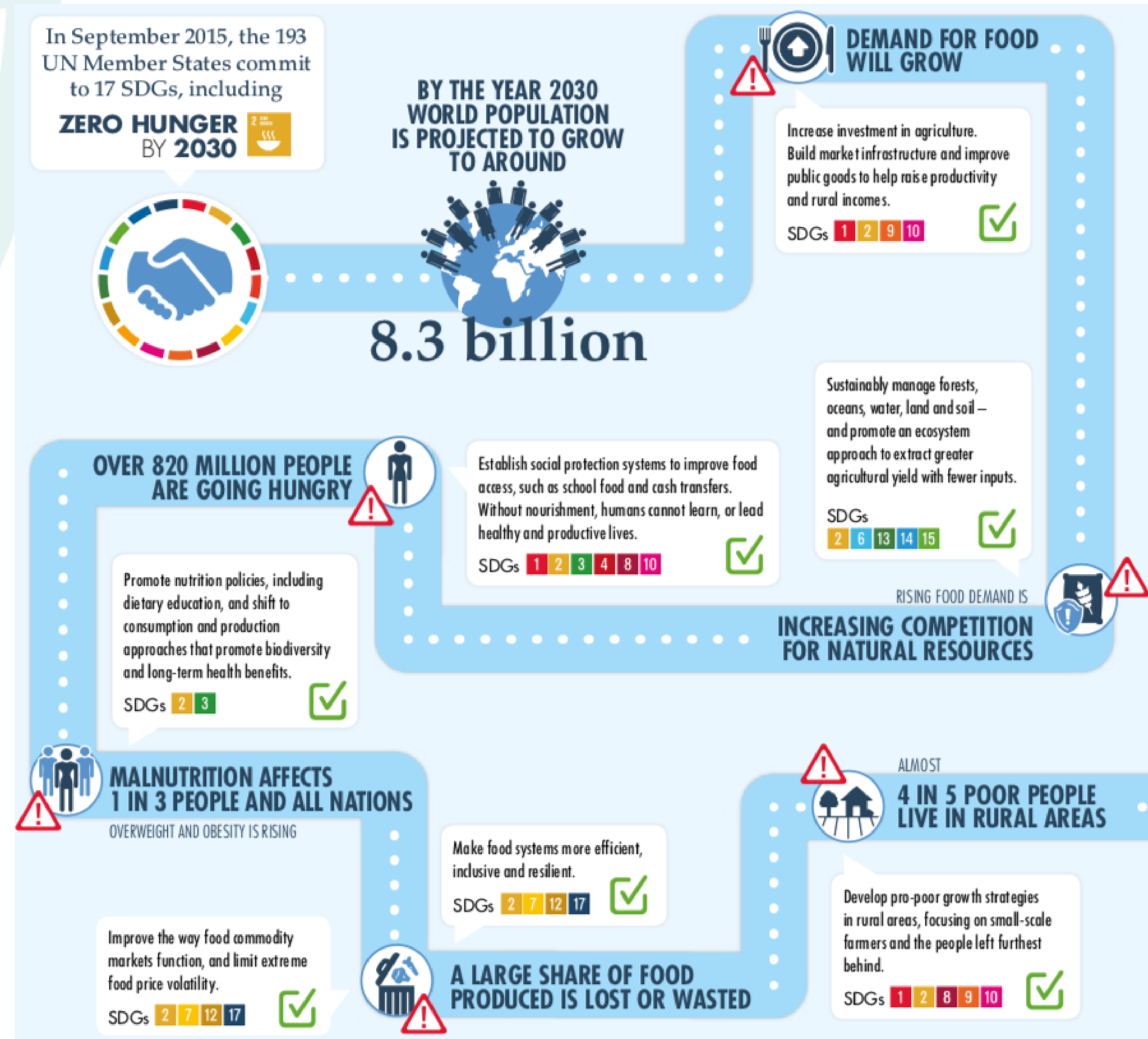
● ราคาวิกฤติ    ● ราคาเฟ้อระว่าง    ● ราคาอยู่ในเกณฑ์ดี

Source: Office of Agricultural Economics, 25 July 2019



# The 2030 Agenda for Sustainable Development

17 SDGs to ZERO hunger by 2030



# Questions

- 1. Give three examples of important tradeoffs that you face in your life?**
- 2. What is your opportunity cost of studying BSc. in tropical Agriculture?**
- 3. Why should policy makers think about incentives? Give an example of incentive in agricultural sector.**
- 4. How do global warming impact the production of tropical agricultural production?**
- 5. How should Thai farmers do to survive the current economic crisis?**

# References

1. <http://www.oae.go.th/assets/portals/1/files/ebook/calendar.pdf>
2. <http://www.oae.go.th/assets/portals/1/files/ebook/2562/tradestat61.pdf>
3. <http://www.oae.go.th/assets/portals/1/files/ebook/2562/commodity2561.pdf>

THANK YOU