

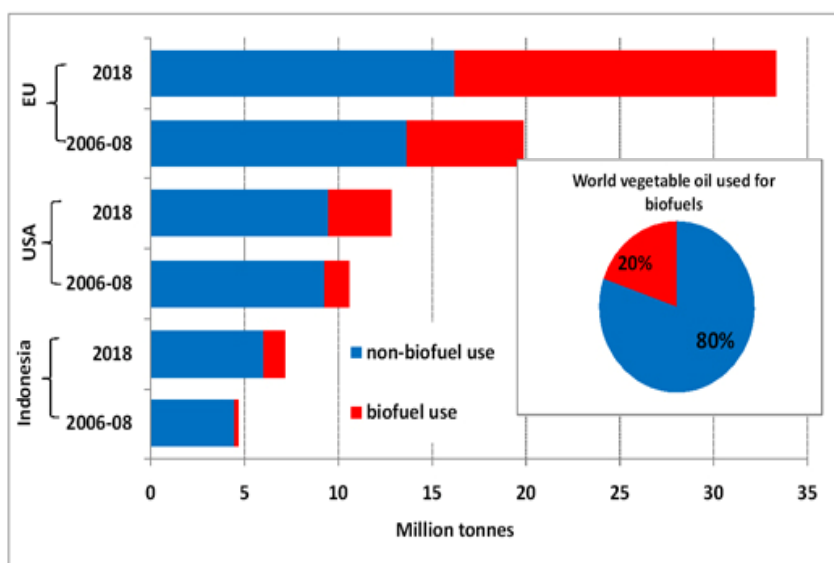
โครงการสัมมนาทางวิชาการ “ความมั่นคงทางด้านอาหารและพลังงานของประเทศไทย”

(การอภิปราย)

โดย
ดร. พิพัฒน์ วีระถาวร
วันอังคารที่ 27 ธันวาคม 2554 เวลา 09.00 -12.00 น.
ณ ห้องคอนเวนชัน ชั้น 1 ชั้น 4 อาคาร 11
ศูนย์วิจัยเศรษฐศาสตร์ธุรกิจ คณะเศรษฐศาสตร์ มหาวิทยาลัยศรีปทุม

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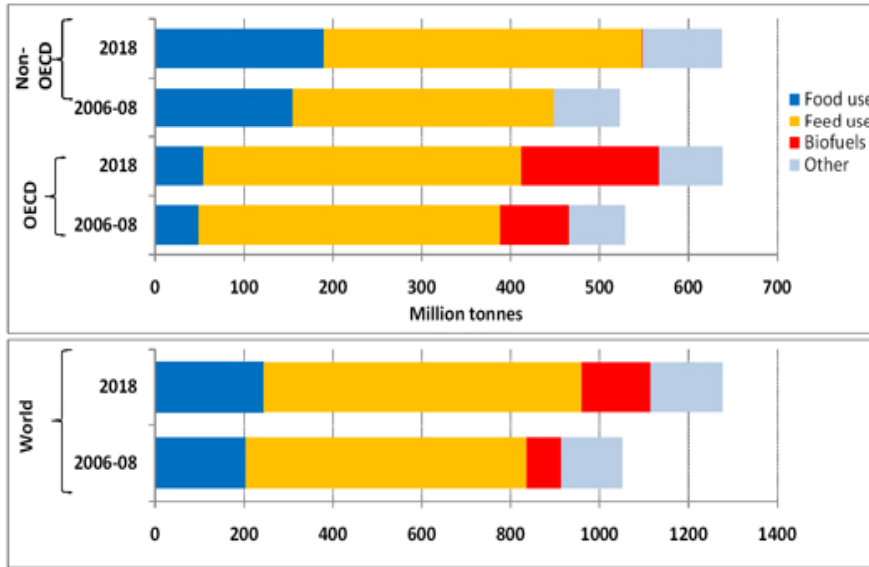
Vegetable oil increasingly used in production of biodiesel



15 April 2011

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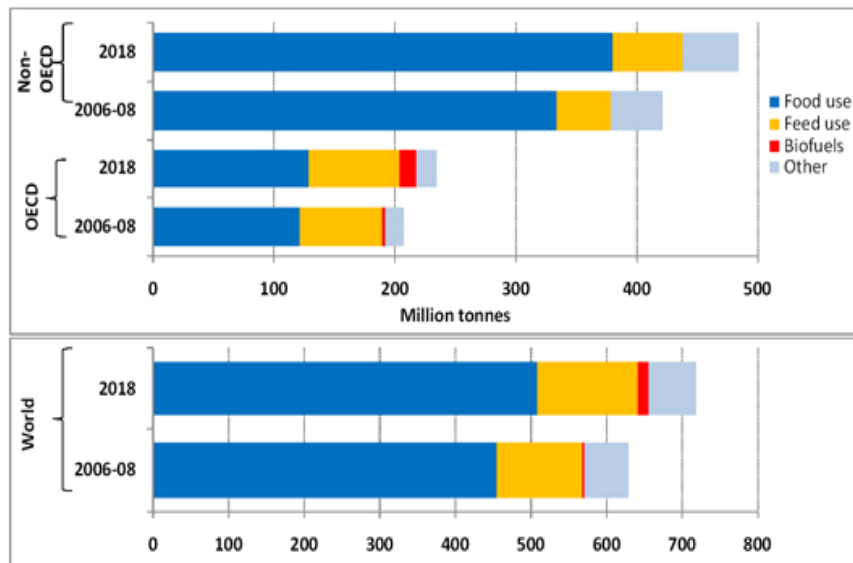
feed and fuel push coarse grain demand up



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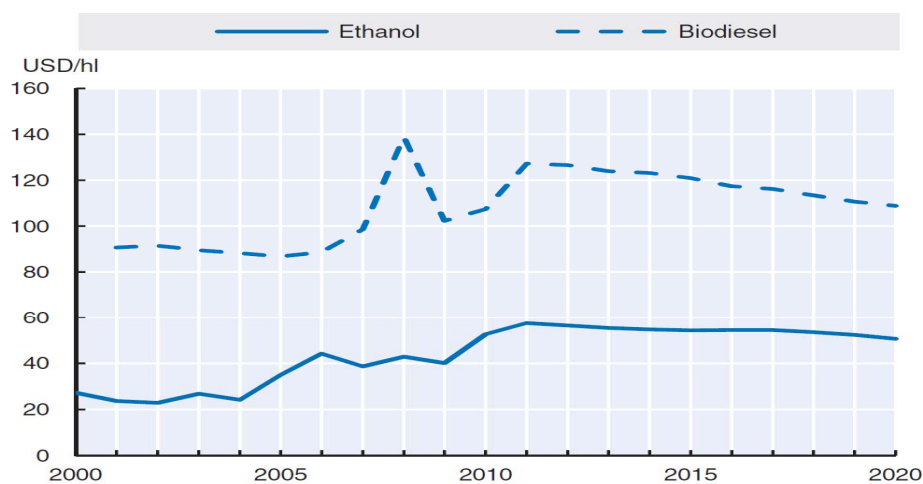
Food and fuel drive up demand for wheat ...



15 April 2011

<http://www.agri-outlook.org/document>

Strong ethanol and biodiesel prices over the Outlook period



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Biofuel prices in 2010

- World ethanol prices increased by more than 30% in 2010

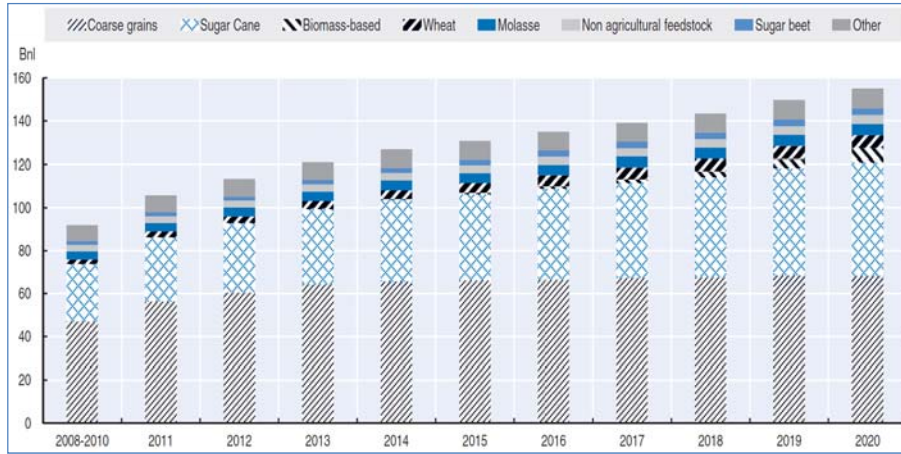
a new commodity price spike of ethanol feedstocks, mainly sugar and maize, and firm energy prices

- World biodiesel prices have increased in 2010 in a context of rising rapeseed and other vegetable oil prices and high crude oil prices.

This price increase is smaller in proportion than for ethanol due to the fact that biodiesel prices remained relatively firm in 2009 compared to crude oil and world vegetable oil prices.

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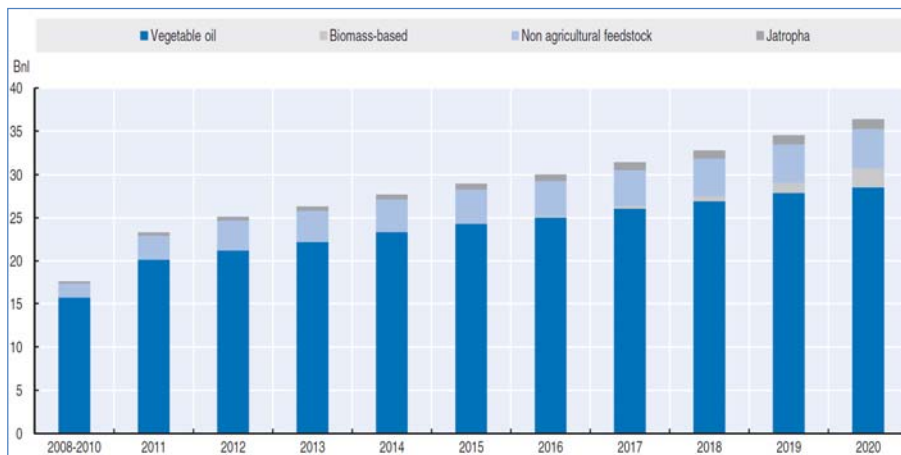
Evolution of global ethanol production by feedstocks used



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Evolution of global biodiesel production by feedstocks used



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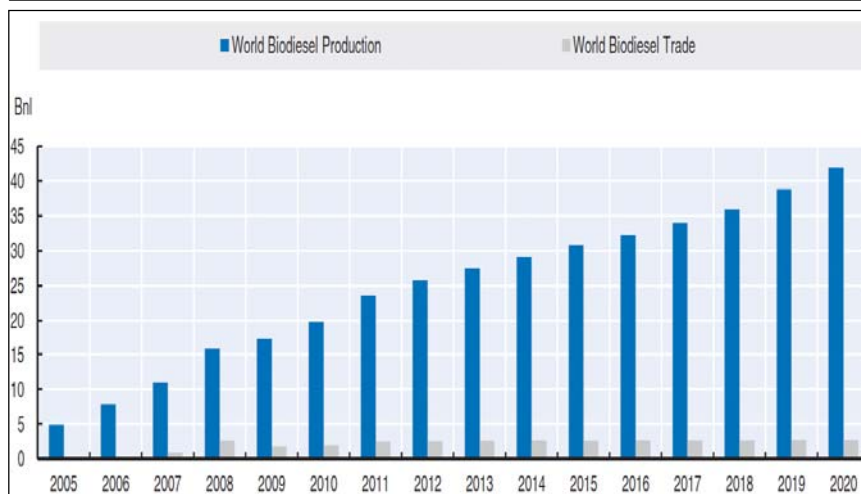
Development of the world ethanol market



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Development of the world biodiesel market



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Outlook 2011-2020

Biofuel use will continue to represent an important share of **global cereal, sugar crops and vegetable oil production** over the Outlook period.

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Biofuel projections: Ethanol

	PRODUCTION (MN L)		Growth (%) ¹	DOMESTIC USE (MN L)		Growth (%) ¹	FUEL USE (MN L)		Growth (%) ¹	SHARE IN GAZOLINE TYPE FUEL USE(%)				NET TRADE (MN L) ²	
	Average 2008-10est.	2020		Average 2008-10est.	2020		Average 2008-10est.	2020		Average 2008-10est.	2020	Energy Shares		Volume Shares	
			2011-20			2011-20			2011-20						
ASIA AND PACIFIC															
China	7 189	7 930	0.71	7 041	6 685	0.18	2 024	2 975	4.34	1.8	1.5	2.6	2.3	148	1 246
India	1 892	2 204	1.78	2 109	2 818	1.48	183	800	1.48	0.9	3.0	1.4	4.5	-217	-614
Indonesia	210	248	0.99	169	168	0.15	0	0	6.77	0.0	0.0	0.0	0.0	41	80
Malaysia	66	74	0.80	87	85	0.09	0	0	5.38	0.0	0.0	0.0	0.0	-21	-11
Philippines	118	603	12.74	263	450	3.49	193	350	-0.30	2.1	3.0	3.1	4.4	-144	153
Thailand	672	2 111	9.32	599	1 602	8.72	424	1 389	4.54	3.8	11.2	5.6	15.9	73	509
Turkey	64	88	0.98	108	142	3.43	50	87	5.23	0.6	0.9	0.9	1.3	-44	-54
Viet Nam	150	423	4.75	95	334	14.84	8	255	25.87	0.1	3.5	0.2	5.1	55	90
TOTAL	91 657	154 962	3.98	91 821	155 983	3.95	73 742	136 123	4.45	5.3	8.8	7.7	12.6	3 792	11 012

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Ethanol by 2020

- **12%** of the global production of **coarse grains** will be used to produce ethanol compared to **11%** on average over the 2008-10 period
- and **33%** of the global production of **sugar** compared to **21%** on average over the 2008-10 period.

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Biofuel projections: Biodiesel

	PRODUCTION (MN L)		Growth (%) ¹	DOMESTIC USE (MN L)		Growth (%) ¹	SHARE IN DIESEL TYPE FUEL USE(%)				NET TRADE (MN L) ²	
	Average 2008-10est.	2020		Average 2008-10est.	2020		Energy Shares		Volume Shares		Average 2008-10est.	2020
			2011-20			2011-20	Average 2008-10est.	2020	Average 2008-10est.	2020		
ASIA AND PACIFIC												
India	179	3 293	26.87	241	3 291	26.87	0.0	0.1	0.0	0.1	-61	2
Indonesia	369	811	6.65	272	1 100	14.37	1.3	5.7	1.7	7.0	98	-289
Malaysia	765	1 331	3.96	206	500	8.35	1.6	4.0	2.0	5.0	559	831
Philippines	158	271	3.97	158	200	1.70	0.0	0.0	0.0	0.0	0	71
Thailand	584	1 697	8.15	561	1 200	5.67	1.9	4.0	2.3	5.0	24	497
Turkey	62	52	5.54	62	187	3.39	0.0	0.0	0.0	0.0	0	-135
Viet Nam	8	100	17.76	0	100	17.93	0.0	0.0	0.0	0.0	8	0
TOTAL	17 608	41 917	5.99	16 314	40 938	6.44	2.0	3.8	2.5	4.7	2 111	2 737

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Biodiesel by 2020

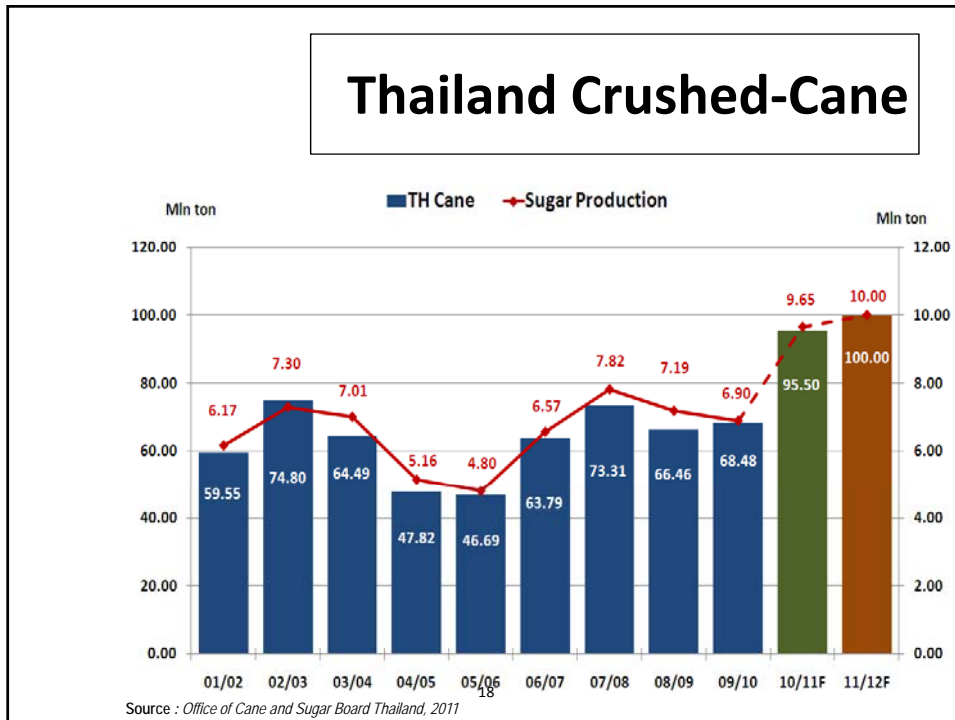
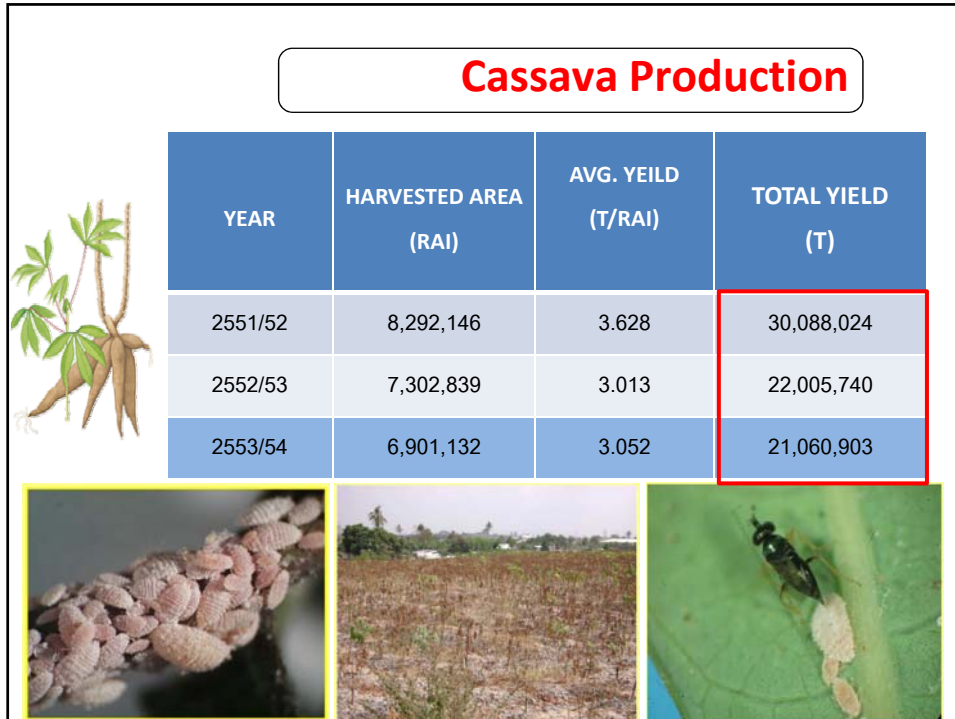
16% of the global production of **vegetable oil** will be used to produce biodiesel compared to **11%** on average over the 2008-10 period

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Feedstock for Biofuel by 2020

Over the projection period, **21%** of the global **coarse grains** production's increase, **29%** of the global **vegetable oil** production's increase and **68%** of the global **sugar cane** production's increase are expected to go to biofuels

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Cane improvement for bio-based products

ปี	พื้นที่	อ้อยเข้าหีบ	ตฟ/ไร่	น้ำตาลที่ผลิต	บริโภคภายใน	ส่งออก
2550	6,207,000	73,010,000	11.76	7,666,050	2,100,000	5,566,050
		80,691,000	13.00	8,472,555	2,200,000	6,272,555
		86,898,000	14.00	9,124,290	2,500,000	6,624,290
		93,105,000	15.00	9,776,025	2,300,000	7,476,025

Source: Dr. Pipat WEERATHAWORN

Potential sugar yield improvement

Year	Cane	Sugar	Sugar yield	Domestic	Export	Improved	Improved
	MT	MT	kg/TC	MT	MT	Sugar 1%	Sugar 5%
2001/02	59.49	6.18	103.8	1.85	4.33	104.9	109.0
2002/03	74.07	7.30	98.6	1.90	5.40	99.6	103.5
2003/04	64.48	7.01	108.7	1.92	5.09	109.8	114.1
2004/05	47.81	5.11	106.9	2.00	3.11	108.0	112.3
2005/06	46.69	4.78	102.5	2.20	2.58	103.5	107.6
2006/07	63.80	6.72	105.3	2.00	4.72	106.4	110.6
2007/08	73.31	7.74	105.6	1.80	5.94	106.6	110.8
2008/09	66.46	7.19	108.1	1.90	5.29	109.2	113.5
2009/10	68.48	6.92	101.1	2.20	4.72	102.1	106.1
2010/11	95.36	9.66	101.3	2.50	7.16	102.3	106.4
			104.2			105.2	109.4

Modified by Dr. Pipat WEERATHAWORN

Source : Office of Cane and Sugar Board Thailand

Sugar yield potential

Cane	Sugar	Sugar yield	Domestic	Export
MT	MT	kg/TC	MT	MT
90.00	9.5	105.2	2.5	7.0
	9.8	109.4	2.5	7.3

Modified by Dr. Pipat WEERATHAWORN

Sugarcane bagasse (ton)

Asia	Production	30% Bagasse	7% Excess Bagasse	10% Excess Bagasse
India	285,029,000	85,508,700	5,985,609	8,550,870
China	113,745,502	34,123,651	2,388,656	3,412,365
Thailand	66,816,446	20,044,934	1,403,145	2,004,493
Pakistan	50,045,000	15,013,500	1,050,945	1,501,350
Indonesia	26,500,000	7,950,000	556,500	795,000
Philippines	22,932,819	6,879,846	481,589	687,985

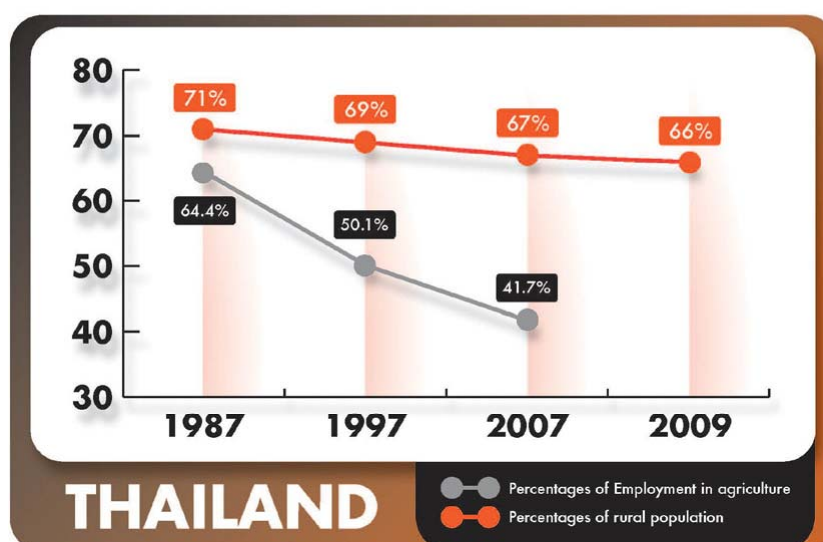
Source: Dr. Pipat WEERATHAWORN

Average yield and maximum yield of various energy crops

Tan (2006) China

crops	Average yield		Maximum yield	
	yield (T/ha)	Rank	yield (T/ha)	Rank
energy cane	150~300	1	420	1
garden cane	120~150	2	300	2
sugar cane	75~105	3	180	3
sorgo	seed	3.75~5.25	9	8
	stalk	37.5~52.5	4	5
winery sorghum	3.75~5.25	10	9	8
corn	6~9	9	12	7
rice	7.5~9.0	8	12	7
wheat	3.75~5.25	10	8.25	9
fresh sweet potato	22.5~37.5	7	96	4
fresh potato	27.0~37.5	6	67.5	6
fresh cassava	22.5~37.5	7	96	4
beet	30.0~45.0	5	90	5

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Source: The World Bank

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Conclusion

- Is biofuel now a basic need for human being?
If yes, we need both food and fuel
- How many % do we need bio-fuel?
- Can we save or reduce usage?
If yes, do it. If not:
- Can we increase productivity?
If yes, How- what-when-who do it?
If not..... Bye...Bye..See you....!!!!

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Thank you!

Dr. Pipat Weerathaworn

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PTT Global Chemical Public company Limited.

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