

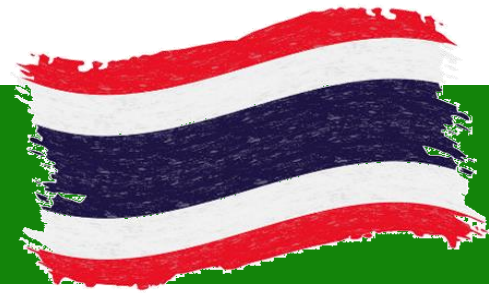
Climate Change and Food Loss and Waste (FLW) in Thailand

*“Reducing Food Loss & Waste (FLW) for Addressing interlinked
Challenges of Food Security and Climate Change”*

July 25-26, 2019

CHINESE TAIPEI

Climate Change

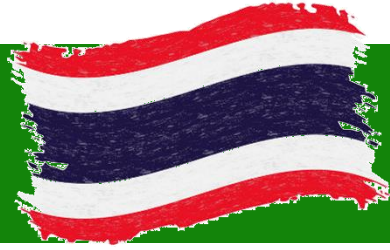


- **major problem in the world that is widely affected in many regions.**
- **affecting economic and social development, ecosystems, plant, animal, population migration and the dissemination of disease.**
- **major concern for developing countries it would affect agricultural production.**

Food loss and food waste



Each year, an estimated 1/3 of all food produced globally is either lost or wasted. That mean the enormous of resources used in food production has been abandoned. Including the enormous amount of greenhouse gas emissions from food production. Which is lost without any benefit and not worth the damage that will affect for the world in the future. (FAO, 2014).

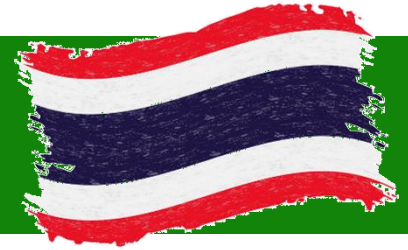


Food loss and food waste

In 2017, Thailand has 27.06 million tons of garbage, 64% is food waste. Only 35% were properly eliminated. So there are still a lot of residual waste causing environmental problems, pollution contamination and cause global warming.

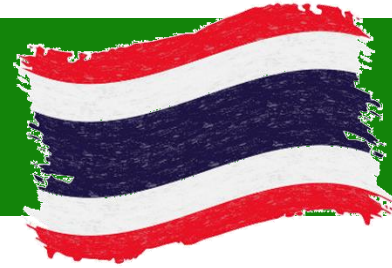


Impacts of climate change on food loss



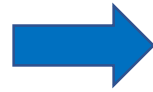
- **expected to have impact on agricultural productivity, post-harvest losses and value chains.**
- **directly, by introducing changes in agro-ecological conditions (e.g. drought, variable precipitation, extreme weather events)**
- **indirectly, by giving rise to new diseases and pests.**

Impacts of climate change on food loss



- **Mycotoxin contaminations is one reason of food loss and Mycotoxins are found in agricultural products in tropical and subtropical countries where temperatures and humidity are high**
- **Aflatoxin is a major problem in agricultural products and is a serious carcinogen.**
- **FAO, an estimated 25% of the world's food crops are affected by mycotoxins, particularly aflatoxins.**
- **Nearly 30% of liver cancer cases worldwide are directly associated with the consumption of foods containing aflatoxin.**

Current status of food waste in Thailand



27.37 Million tons (2018)

1.13 kg./day/person

74,998 tons/day

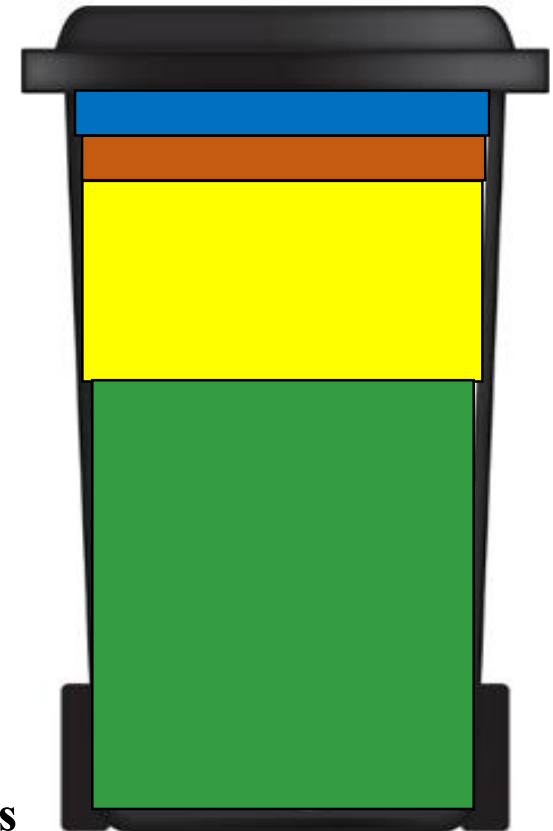
Solid Rubbish 3 % -----

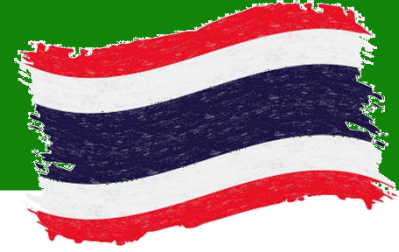
Hazardous Waste 3%-----

Recyclable waste 30 % -----

Organic Waste 64 %-----

- **Garden waste :such as flower ,leaf**
- **Household waste: such as egg shell, fruit peels**





Food Supply Chain

Food Loss

53.2 % global average Pre-consumer food waste



25.5 %

Primary production



22.5%

Post harvest handling and storage



5.2%

Processing and packaging

Food Waste

46.7 % global average post consumer food waste



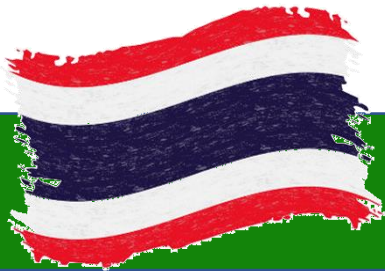
12.8%

Distribution and retail



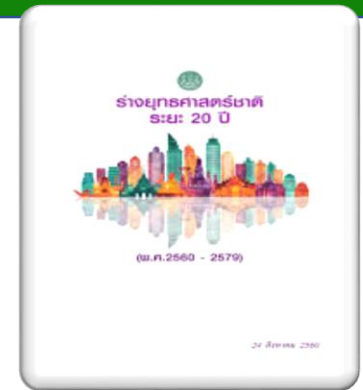
33.9%

Consumption



Plans and Policies for Food waste

20 Years National strategy : Improve quality of life with standard and protect environment



THE TWELFTH NATIONAL ECONOMIC AND SOCIAL DEVELOPMENT PLAN (2017-2021)

Action Plan for Environment quality 2017-2021

Plan 2: Protection rehabilitation rejuvenate of environment with focus on prevention at the source of the problem

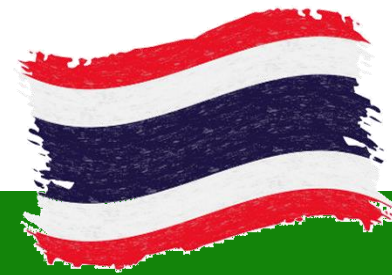




Food loss and waste from field to market

**Food loss and waste impacts not only climate,
but also personal and national economics.**

**The FAO estimates that food worth about \$940
billion is lost or wasted each year throughout
the entire food supply chain.**

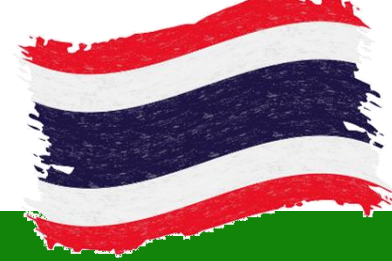


Reducing food loss and waste

Measures to reduce food loss can also increase climate resilience.

For example, improving storage or refrigeration can reduce the vulnerability of harvested produce to heat or pest infestation and as well as preserving nutrients, especially in highly perishable produce like fruit and vegetables.

Improving processing techniques not only helps reduce postharvest loss but also provides farmers with the opportunity to improve the quality of their produce, exploit new markets and increase their incomes.



Actions relates to FLW and climate change in Thailand

Research on Impacts of Climate Change to Agricultural Production Systems (2012-2016)

Study on impacts climate change to pest infestation of coconut.

The long drought and for many years related to the higher severely infestation of Black-headed caterpillar.

Research and oil palm Improvement for global warming and drought tolerance

The plantation areas of oil palm in Thailand have a tendency expand into the climate is a hot and dry areas. This study aims to find genetic base is resistant to the high temperature and drought of oil palm. The results showed that the clone of oil palm used for breeding program include clone of oil palm Tenera hybrids from Chiang Rai province can be adapted to the environment as in hot and cold weather in the highlands.

(Somchai.*et al*, 2017)

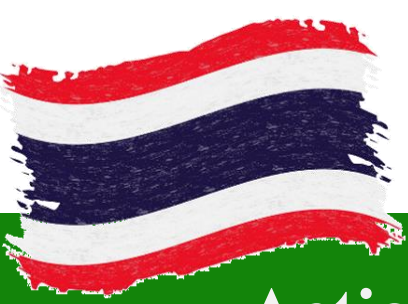


Actions relates to FLW and climate change in Thailand

Impacts of climate change and adaptation simulation for risk reduction of rain-fed rice production in Central Region

The climate change projection results shown that mean rice production projected to decrease by 0.70-10.07% in 2030-2090. The adaptation simulation provided evidence that late planting dates can be reduced production risk by 0.76-22.07%. These eco-friendly adaptations can reduce rice production risk from adverse effect of future climate change.

(Nirote. *et al*, 2019)



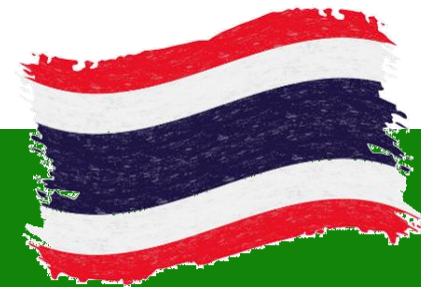
Actions relates to FLW and climate change in Thailand

Influence of climate change on some mycotoxigenic species and their toxin production.

Lower water activity or relative humidity with higher temperature and elevated carbon dioxide motivated *Aspergillus niger*, *A. flavus* and *Fusarium moniliforme* to produce higher ochratoxin A, aflatoxin B1 and fumonisin in in vitro and in coffee bean, peanut and maize grains.

(Nettra. *et al*, 2017)

Actions relates to FLW in Thailand



Increase efficiency for management commodities throughout the food chain



Development processing postharvest to save quality of agricultural product



Reduce losses during harvesting until to consumer



Storage of quality by cool chain for vegetable, fruit, milk and meats



Actions relates to FLW in Thailand



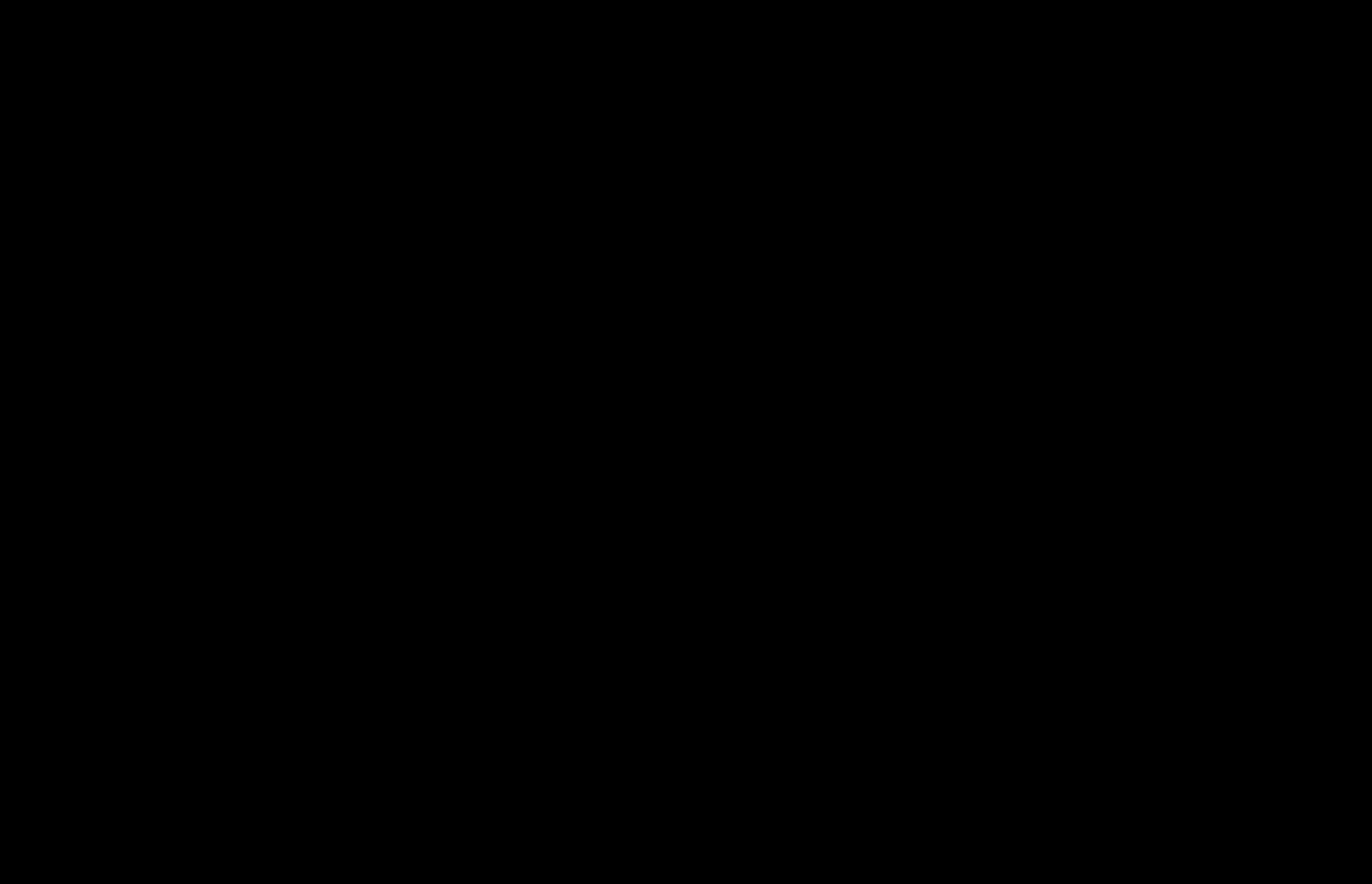
3Rs: Reduce Reuse and Recycle



Reduce waste production



Waste management by transforming to energy or renewable fuels





Thank you

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