Development, Action and Planning
34th International Vegetable Training Course

Application of Good Agricultural Practices (GAP) for Vegetable Crops Development in East Kalimantan Through Technology Innovations

by:

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- Institution: Conduct assessment and dissemination in East Kalimantan
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Assessment Institute for Agricultural Technology (AIAT) of East Kalimantan /Indonesian Agency for Agricultural Research and Development (IAARD)

- main duty is to conduct assessment, assembly and development of advanced agricultural technology in specific location of East Kalimantan

Tasks:

- Inventory and identification of agricultural technology advance which needed in specific location of East Kalimantan.
- Conduct assessment, research and assembly of agricultural technology advance in specific location of East Kalimantan.
- Conduct agricultural technology development and dissemination of assessment results.
- Provide information, documentation, cooperation, dissemination and optimization of assessment, assembly, and development result for agricultural technology advance in specific location of East Kalimantan.
- Provide technical service for research and assessment activities and agricultural technology advance assembly in specific location.
- Conduct Internal coordination and administration management.

Activities

AIAT / IAARD

Land resource management

Social & Economic

Dissemination

Post Harvest and A. Engineering

Laboratory

Plant & Animal Breeding

East Kalimantan Province

East Kalimantan Province

- According to Local Statistics Agency, East Kalimantan Province together with north Kalimantan Province have a wide area of around 208.657.7 km^2 with population reaching 2.750.369.

Through ***agro-ecological zone*** approach,→ agricultural development zones in East Kalimantan, namely:

(1) Low land and high land forestry zone are as much as 6.714.358 ha and 3.869.399 respectively,

(2) Low land and high land estate zone are 4.245.636 ha and 210.152 ha respectively,

(3) Low land agricultural-forestry is 41.789 ha and high land 26.187 ha,

(4) Wet land agriculture zone is 758.211 ha and high land is 18.512 ha,

(5) Low-dry land agricultural zone around 1.979.467 ha and high land is 121.952 ha,

(6) Peat land as mush as 719.222 ha, and

(7) Fishery and mangrove zone is around 654.873 ha.

Development, Action and Planning

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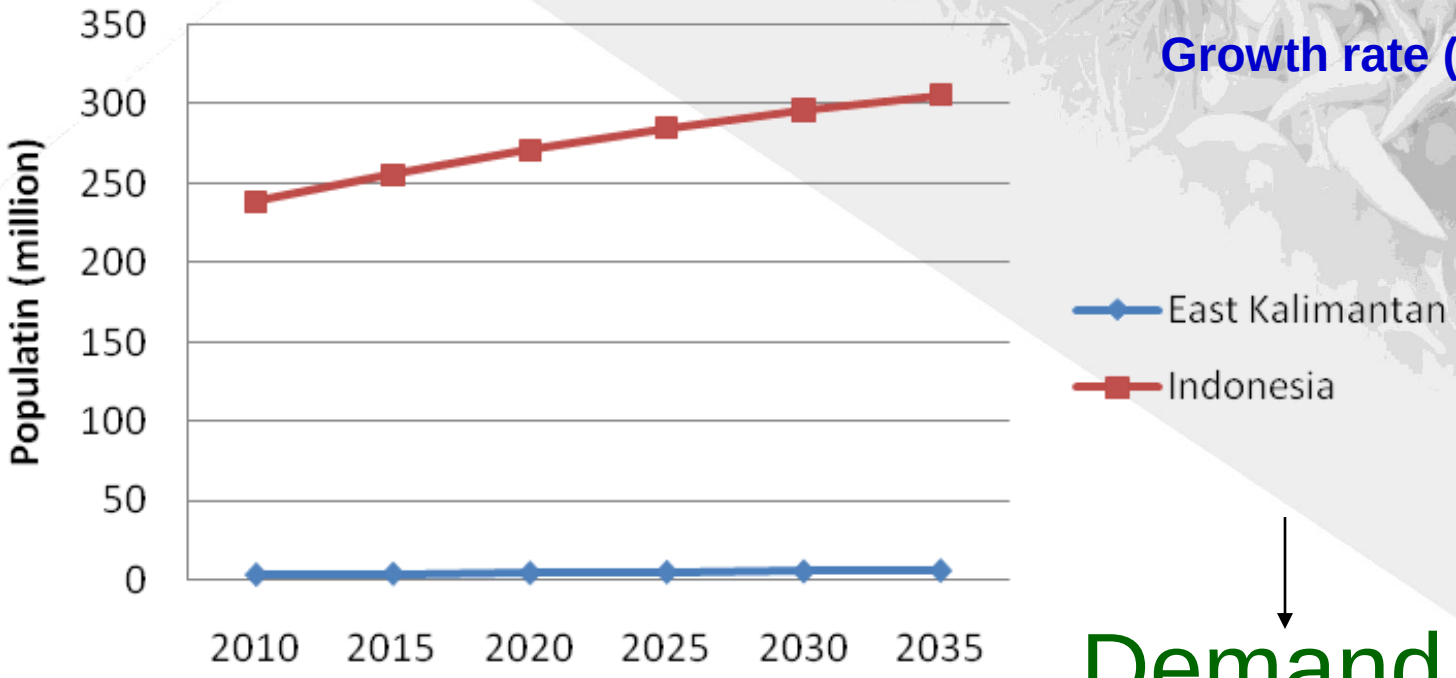
Background and Problems

- Fluctuation of vegetables price as it is caused by environmental factors related to the yield and crop appearance/quality.
- Development of vegetable crops can be guided in to physical factors of environmental suitability in optimum.
- The availability of crop varieties which are suitable to the local environment which have high potential is a factor which is directly affecting yield capability and various adaptability→Need Assessment.
- Minimum cultivation technology, and post harvest technology capability which actually can promote the increment of production and productivity which followed by improvement of quality which is affordable appropriately to the market demand.

Indonesia and East Kalimantan Population 2010, 2015 and prediction up to 2035



Growth rate (INA): 1.07

Demand ?

- **Food Crops**
- **Vegetables**
- **Etc.**

Average Consumption according groups of food in Indonesia

Groups of Food	Consumption (Kcal/capita/day)
Grain	927.05
Tuber	37.05
Fish	45.34
Meat	41.14
Egg and Milk	56.2
Vegetable	**38.72**
Legume	56.19
Fruit	40.91
Oil and Fat	233.39
Beverage	100.29
Spice	16
Others	59.18
Food Product	273.84
Alcohol contain beverage	0
Tobaco	0
Total	**1925.61**

Souce: BPS, (2015)

Global and regional per capita food consumption (kcal/capita/day)

Region	Food Consumption (Kcal/capita/day)
World	2940
Developing countries	2850
Near East and North Africa	3090
Sub-Saharan Africa[a]	2360
Latin America and the Caribbean	2980
East Asia	3060
South Asia	2700
Industrialized countries	3440
Transition countries	3060

a: exclude South Africa

Souce: FAO, (2015)

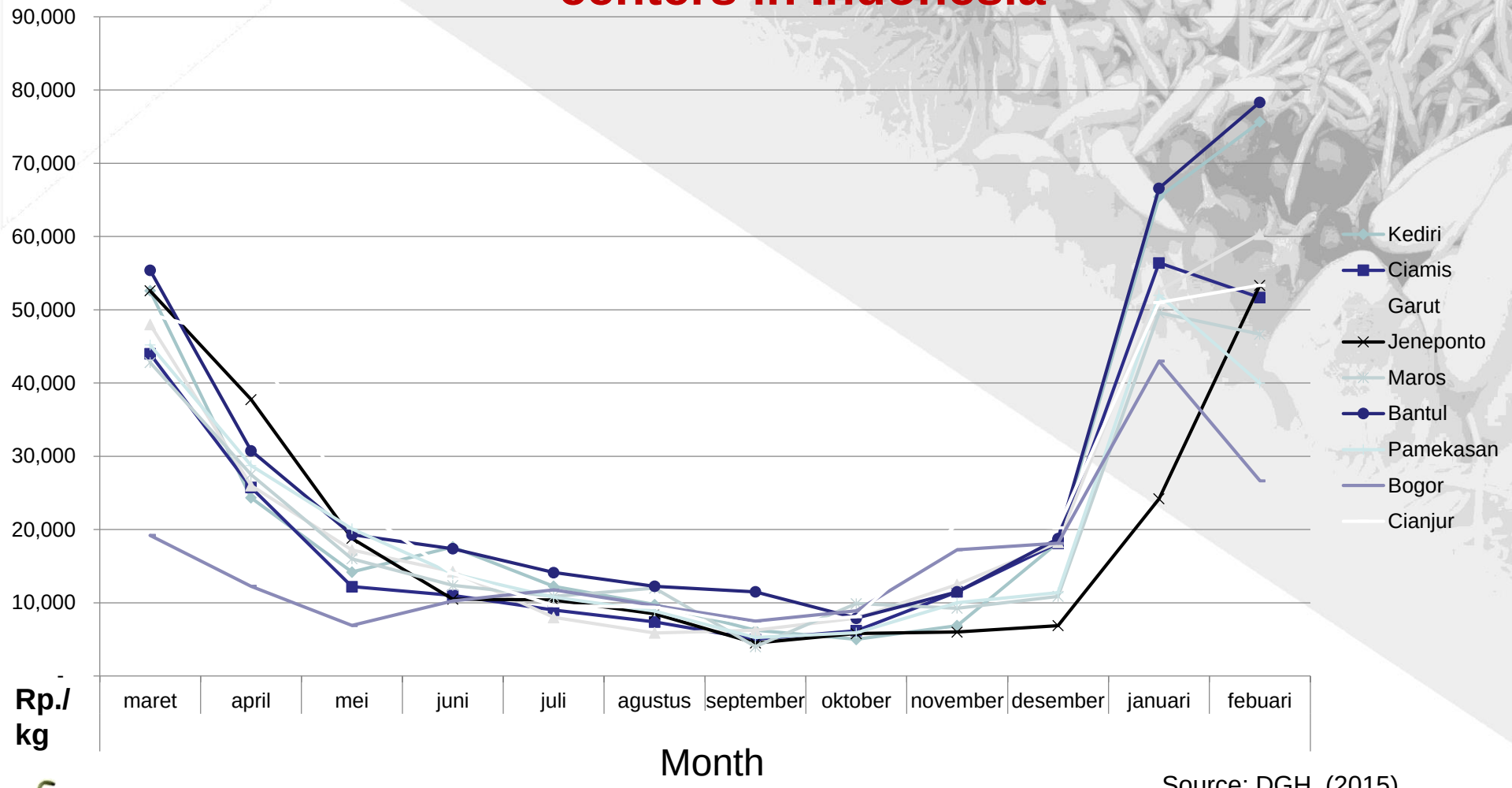
…background and Problems

- Cultivation technology described in GAP standard in specific location with sufficient knowledge's in new innovations of cultivation technology, pest and diseases control, or post harvest are significantly needed to support by horticulture/vegetable crop development.

  → Vegetable's demand which is tend to increase and probably can be fulfilled in stable. To develop horticultural agribusiness region program → supported with improvement of knowledge's, skills and capability of agricultural practitioners especially farmer in every locations specifically based on their typical agro-ecological zones→ AIAT Role
- Improvement can be supported by technology assessment and assembly, GAP application in each level of production including small farmers especially in specific location of East Kalimantan.

1st Fact

Annual Chili price at production centers in Indonesia



Source: DGH, (2015)

2nd Fact

- Consumer are desire fresh chili
- Fresh chili has short self life (3-4 days)
- Expensive cost of transportation
- In dry season :
  - ✓ Water scarce. Farmer reduce the risk of chili cultivation→ less planting
- Rainy season :
  - ✓ Pest and diseases (Yellow virus, Fusarium, antracnose, flies)
  - ✓ Rain caused fruit to fall
  - ✓ Increase cost in harvest
  - ✓ Distribution problems

Solution

GAP

Objectives

- Conduct assessment of good agricultural practices (GAP) for vegetable production which are reliable applied in East Kalimantan.
- Introduction of technologies advanced to improve continuous vegetable production in East Kalimantan→ through the program of horticulture region (MOA).
- Strengthening food nutrient sufficiency by developing sustainable vegetables home-garden farming with GAP in East Kalimantan.

Activities

- Assessment of good agricultural practices for vegetable production which are reliable applied in East Kalimantan based on IndoGAP.

  - ✓ Indonesia has been introducing GAP for vegetables since 2003, and already known internationally as the IndoGAP in 2004.
  - ✓ Gradually, all food products which globally traded are voluntarily to have the GAP certification.
  - ✓ Good Agricultural Practices (GAP) is technology application based on morality, responsibility, equity and prosperity or in other word GAP is the application of agricultural production process certification which using developed technology, environmental friendly and sustainable, so that harvested product will safely to be consumed, worker welfare is taken in to concern and farming system could give economical benefit to farmers.

…activities

- Introduction of technologies advanced to improve continuous vegetable production in East Kalimantan.
  - ✓ In the 34th IVTC, → some technologies advanced which are introduced and thought to be handy are suitable to be developed in East Kalimantan regions.
  - ✓ Those technologies are appropriate for simple agricultural practices with lower cost and input.
  - ✓ Typically farmers in rural areas of East Kalimantan are lack of knowledge's and capital compared to their land availability which may giving a chance to reliable advance technologies and inexpensive to be introduced.
  - ✓ The technologies will applied together with the GAP or either as being a part of the GAP as well to be known, applied in practices and resulting higher production, productivity and also sustainable.

Those technologies which will introduced are:

- ✓ Bio-pesticide technology application using local potential wisdom for chili and shallot cultivation.
- ✓ Introduction and assessment of simple low cost greenhouse technology to improve effective and efficient agriculture on vegetables farming.” low (net) tunnel greenhouse.

- ✓ Introduction of good agricultural handling of harvest and post harvest technology for vegetables farming.

  1. Sanitary procedure

  Introduction of sanitary procedure to comply GAP aimed for quality and healthy food

  2.Fresh vegetables packaging technology

  Introduction of packaging utilization for fresh vegetable product.

  3. Cold storage

  Introduced to group of farmers

- ✓ Promoting Good Agricultural Practices (GAP) in vegetables farming management application to local government in collaboration with all parties in East Kalimantan.

  →The method that has been conducted is following the concept of multi-channel dissemination spectrum. Dissemination is primarily necessary to strengthen GAP application involving all parties, such as stake holder, private sectors, NGO, national government and farmers.


meeting


dialogue

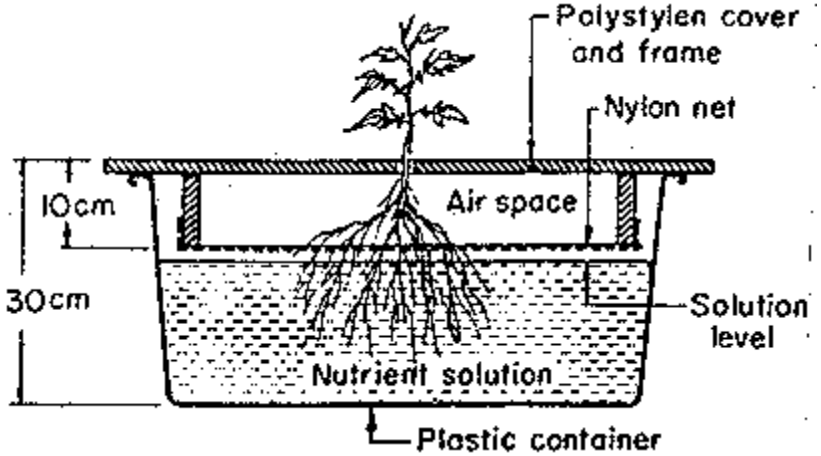

training

exhibition

- **Strengthening food nutrient sufficiency by sustainable vegetables home-garden farming.**

  IAARD has been conducting a national program called sustainable vegetables home-garden farming to strengthen food security in every household. This program includes technology innovation as one of the approach method to have a contribution to national food security. From the 34th AVRDC training, technology innovations can be introduced and implemented namely:

  1. Circulating, or non circulating hydrophonic
  2. Urban and suburban farming technology by the concept of household sustainability to food security.



- ✓ Household food sustainability
- ✓ Seed/germ sustainability
- Urban, sub-urban farming technology
- Energy saving & env. friendly

No.	Objectives	Program supported	Activities/ Innovation Technology	Object/ Collaboration
1.	Assessment of good agricultural practices for vegetable production which are reliable applied in East Kalimantan	Horticulture region development program	▪ Introduction of IndoGAP ▪ Introduction to Global (International GAP)	• Local gov. • Farmers • Private company • IAARD/MOA
2.	Introduction of technologies advanced to improve continuous vegetable production in East Kalimantan	Horticulture region development program	▪ Bio-pesticide ▪ GH, Low tunnel GH ▪ Post Harvest handling technology	• Local gov. • Farmers • Private company • IAARD/MOA
3.	Strengthening food nutrient sufficiency by developing sustainable vegetables home-garden farming with good agricultural practices in East Kalimantan	Sustainable home-garden farming (KRPL)	▪ Urban, sub-urban farming technology ▪ Hydrophonic and non circulating hydrophonic	• Local gov. • Farmers • Household • IAARD/MOA

Challenges

- Climate change effect on agriculture which caused in uncertainty of weather, crop calendar, pest and diseases attack, draught, that cause instability production and productivity.
- Lack of infrastructure.
- Lack of agricultural worker caused by industrialization.


Thank You
Kop Kun Kap
Terimakasih