DEVELOPMENT ACTION PLANNING (DAP)

34th International Vegetable Training Course
"Vegetables: From Seed to Table and Beyond"
Module 2





INTRODUCTION

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Institution : **Indonesian Center for Agricultural Postharvest Research & Developmen**

MINISTRY OF AGRICULTURAL OF REPUBLIC OF INDONESIA

Main Job : **Researcher on Postharvest**

3 most useful module : GMP, Vegetable Value Chain, Bioactive Compounds in vegetable and fruits

FUNCTION OF ICAPRD

1. Research on quality characteristics of agricultural product, processing, quality improvement, by-product and waste utilisation , new product development and food safety.
2. Collaborations with national and international agribusiness on postharvest R&D.
3. Dissemination and tranfers technology to the farmer

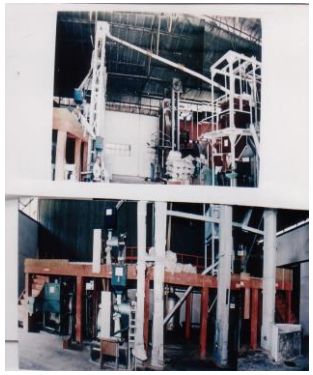
FACILITIES

1. Laboratories

- ❑ Analytical chemistry (accredited SNI ISO/IEC 17025:2008)
- ❑ Physical properties (accredited SNI ISO/IEC 17025:2008)
- ❑ Microbiology
- ❑ Sensory evaluation
- ❑ Nano technology

2. Pilot Plants

- ❑ Essential oil processing
- ❑ Fruit juice processing
- ❑ Rice processing
- ❑ Tofu processing
- ❑ Flour mill



The Value Chain of Fresh Handling and Processing of Shallot





BACKGROUND/PROBLEM

- Mainly spices ingredients in Indonesia
- Still has a high loses (reached of 25%) due to lack of knowledge of farmers, especially on postharvest technique.
- Shallot price is very fluctuative depend on production. At one time it's over production (low price), but the other time the production is low (high price) because of climate and pest/disease; and even by trading mafia.
- High price differences of the shallot→ Rp. 5.000/kg, (farmer) - to Rp. 100.000,/kg (market)

Functional properties of Shallot

Shallot contains vitamin C, potassium, fiber, folic acid. calcium and iron. Shallot also contain a natural plant growth regulators such as auxin and gibberellin hormones.

Component	Values
Quercetin	2612,41 ppm
Antioxidant activity	225,73 µg/mL
Antocyanin	79,14 ppm
Phenol total	319,92 ppm

Setyadjit et al (ICAPRD), 2013

Objectives

- To maintain of freshness shallot, to decrease the damage of shallot from 20% to 10% so that the quality and stock will be maintained.
- To increase of added value through minimally process of shallot
- To increase added value through processing of waste (shallot peel) as a natural antimicrobial agent

POSTHARVEST OF SHALL0T

(conventional technology)

Fresh shallot with leaves

Made a small bunch

Collecting from field

Made a large bunch

(shallot bunch)

(shallot no bunch)

Storaging

Packaging and Transportation

Sun Drying

Potential losses : 20-25%

Critical processing → Drying & storage

Drying and Storage Shallot

The main problem of shallots losses is weight loss

The losses of shallot can be reached 30% during storage in warehouse for 2 months

Damage of Shallot

Sprout tuber

rotten due to microbial attack

Empty tuber

Activities

- Improvement of drying and storage methods of shallot by using instore drying
- Minimally process of shallot
- Processing of waste (shallot peel) to be natural antimicrobial agent

Instore drying for shallot

→Instore dying is a technique in which the drying and storing is done in the same building

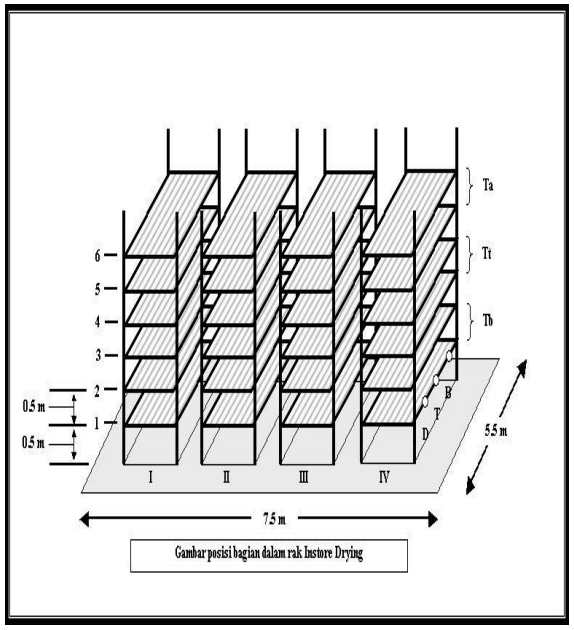
→The building equipped with aeration, fiberglass as the roof, wood-fired heating furnace, blower and motor and controll temperature and humidity

→It has a high capacity more than 15 tons

→It can decrease the damage of shallot from 20% to 10%

→ It can longer shelf life (from 4 weeks to 2-3 months)

→ It can overcome shallot drying in the rainy season



Gambar posisi bagian dalam rak Instore Drying

Detail Activities

(1) Instore drying for shallot

Processing and treatment:

Shallot w/o lieves

Soaking with maleic Hydrazide 0,5,10,15 ppm combine with benomyl 500 ppm

Packing : Plastic PE, paper, styrofoam

Optimization formula

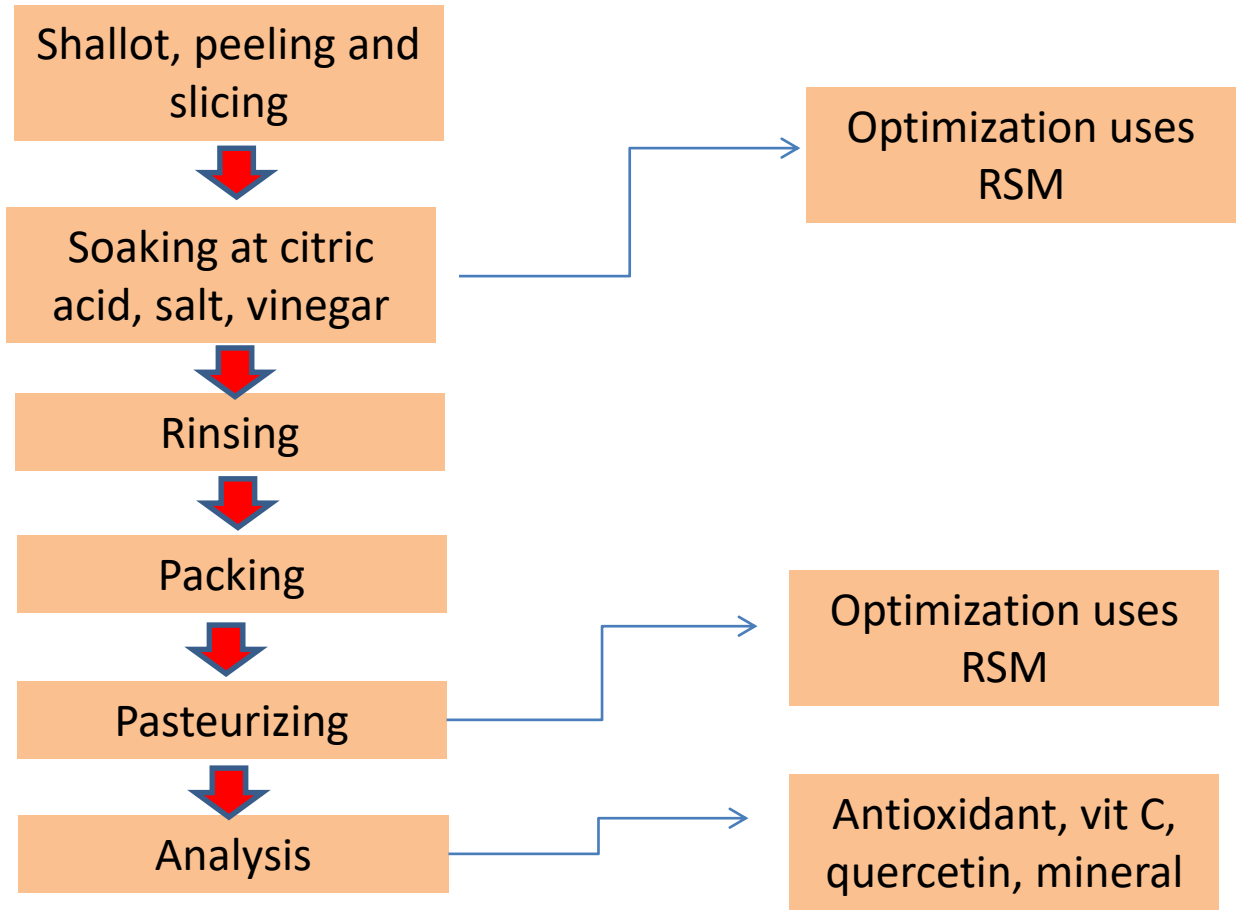
Applied at instore drying:
-ambient temperature
-modified temperature

Analysis: % sprouting, spoiled level,texture,color, physiological properties

→Instore drying has been applied in a group of farmers (but without using treatment) and need to be developed further to other groups

(2) Minimally process of shallot

→This activity is aimed to maintain availability of shallot.



(3) Processing of waste (peel) to be natural antimicrobial agent

Shallot peel

↓

Drying

↓

Flouring

↓

Extracting:
-boiled water
- Etil alkohol

↓

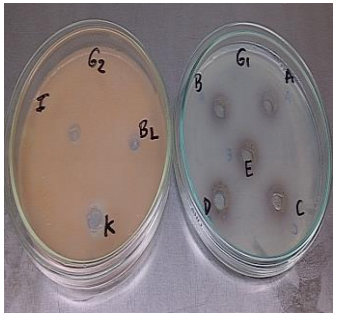
Evaporated

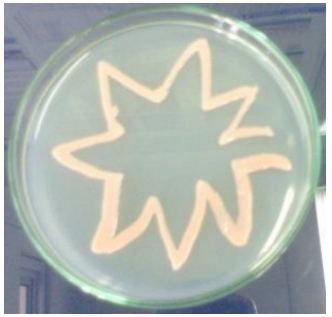
↓

Analysis

↓

Testing for phatogenic bacteria compared with pinicillin





Analysis → Phenol total, antioxidant, sulfur

Testing for phatogenic bacteria compared with pinicillin → *Salmonella sp*, *E. Coli*

Human Resource

- ✓ The trial will involve researcher, analyst, techniciants, extension worker and farmer group

Budget

- ✓ Will be proposed to Goverment of Indonesia

Beneficiaries

→Farmer groups
→Small processor
→Extension worker

Challenges

→the difficulty of managing farmers
→unsynchronized between the stakeholders who will be involved
→Require fund to apply technology
→Linkages among centre of production and consumer location are not all accessible

Thank you

www.pascapanen.litbang.pertanian.go.id

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