
**AIMING AT SEED POTATO SELF-SUFFICIENCY
FOR INDONESIA**



**DIRECTORATE GENERAL OF FOOD CROPS AND HORTICULTURE
OF REPUBLIC OF INDONESIA**



JAPAN INTERNATIONAL COOPERATION AGENCY

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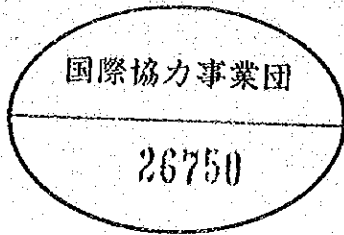
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INTRODUCTION

The project for seed potato self-sufficiency was started based on a Decree from the Indonesian Minister of Agriculture in 1992.

In this project, in cooperation with the government of Japan (JICA), the seed potatoes which are the basis of the project, are being multiplied at the Lembang Horticulture Research Institute (LEHRI), the Foundation Seed Farm (BBI), and the Stock Seed Farm (BBU) in Pangalengan.

Using these stock seed potatoes, the seed growers can multiply extension seed potatoes. Then the extension seed potatoes, whose quality is expected to be the same as imported potatoes, will be placed on the seed market.

A potato tuber is used itself as the seed in potato production. Thanks to the potato being a large seed, it is easily cultivated and has a short growing season. However, one disadvantage is the existence of many seed borne diseases which decrease the yield. Because of that, the seed potatoes which do not have diseases inside the tuber are good seed potatoes. They have strong germinability and produce a high yield.

The most important factor for an increased yield of potatoes is that healthy seed potatoes be used.

They are very important seed-borne diseases

Potato Y mosaic



Potato leaf-roll (center of photo)



Bacterial wilt is important soil disease
(center of photo)



In the propagation of seed potatoes, one seed tuber is multiplied into six to ten new tubers. This means that the multiplication rate is low in comparison with other crops such as rice.

It is impossible to cultivate a large amount of seed potatoes all together because of the low multiplication rate. The seed potatoes should be cultivated step by step while preventing the introduction of disease.

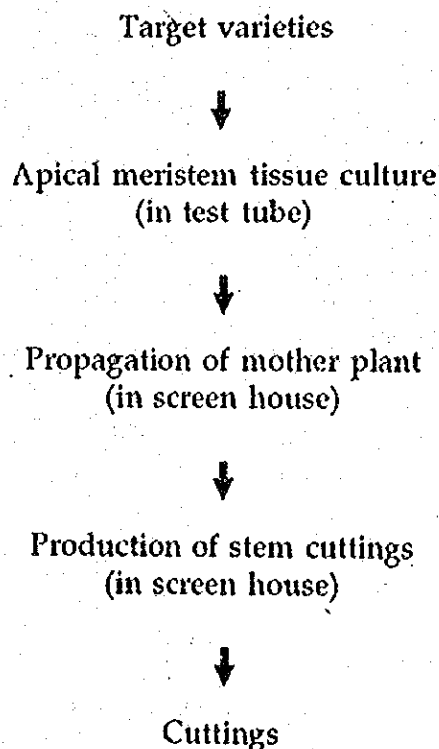
Taking this matter into consideration, in most developed countries, government or governmental agencies conduct the multiplication of disease-free seeds that should be used as the basic seed in the earlier stage. Namely, it is administered as a national program.

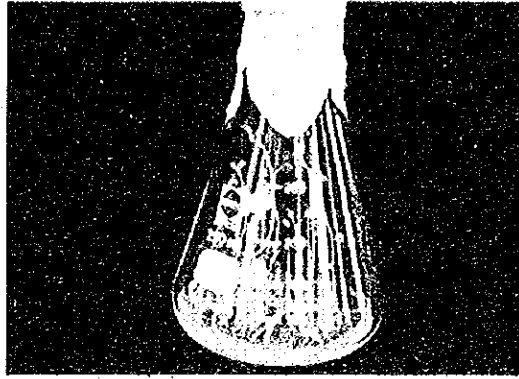
As well, here in Indonesia the system for the multiplication of seed potatoes has been organized in cooperation with the government of Japan (JICA), and the production of self-produced seed potatoes is now under way in West Java.

It is anticipated that an understanding of the purpose of the project will lead to the self-produced seed bringing a high performance.

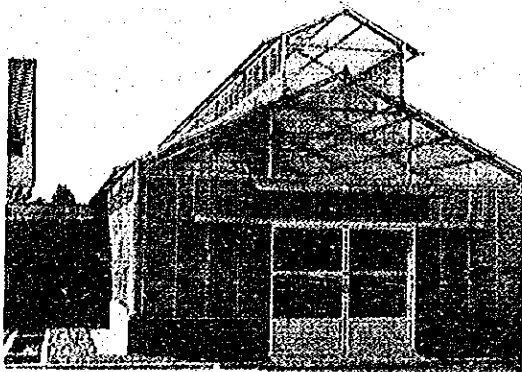
THE WAY OF SEED POTATO MULTIPLICATION

Lembang Horticulture Research Institute (LEHRI)





Tissue culture



Screen house



Mother plants



Cutting (sticks)

The beginning of seed potatoes is the apical meristem tissue culture. The microscopic growing point (0.2 mm) is cut using a microscope for the purpose of getting disease-free plants. These disease-free plants are grown in a test tube for around half a year.

After it is confirmed that the plants are disease-free, the cuttings are planted in sterilized soil in a screen house, which inhibits the onset of vectors, and grown as mother plants. From these mother plants cuttings are harvested and sent to BBI.

Foundation Seed Farm (BBI)

Production of G₀ from cuttings
(in screen house A)



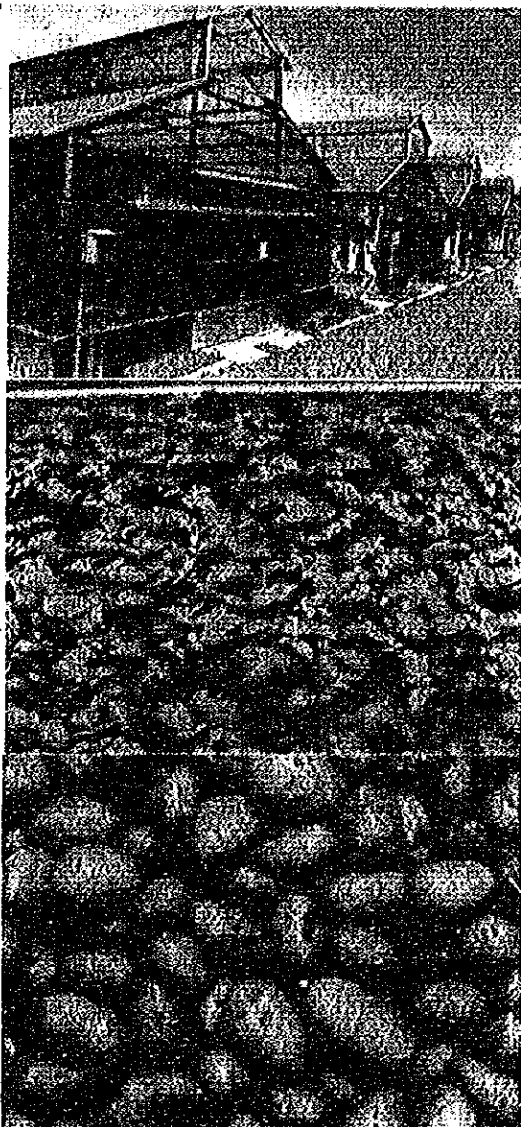
Production of G₁
(in screen house B)



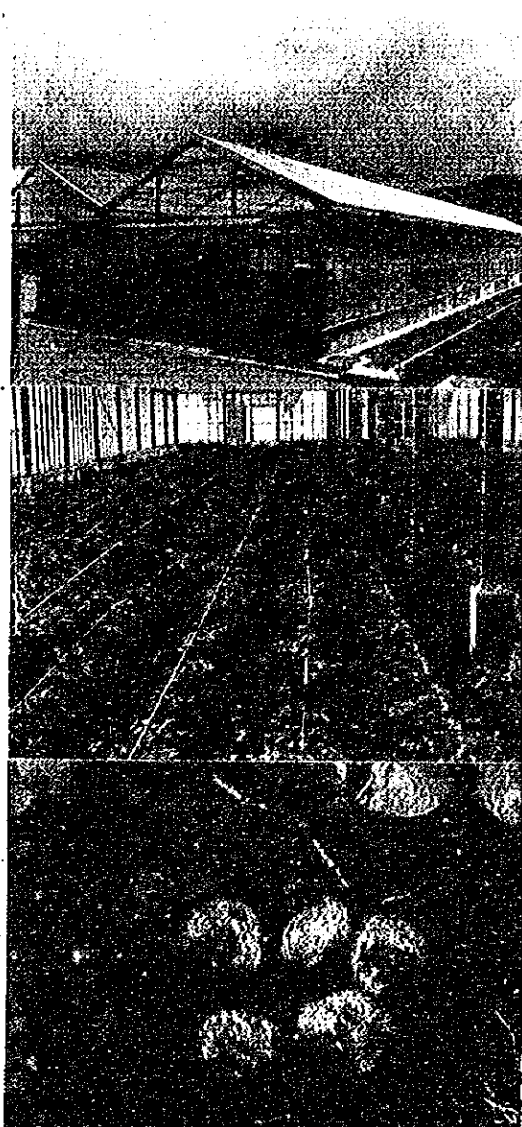
Production of G₂
(in foundation seed farm)



Foundation seed



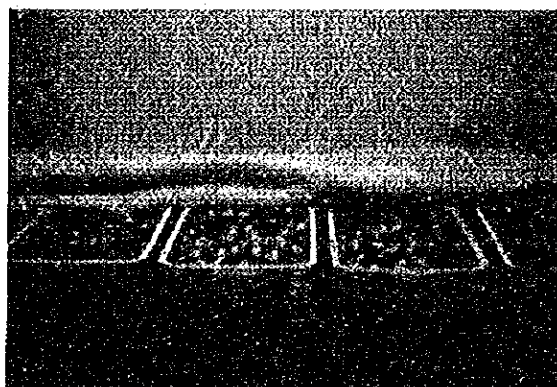
*Screen house-A
Production of G₀ seed*



*Screen house-B
Production of G₁ seed*



Foundation seed farm



Foundation seed (G₂)

The cuttings sent from LEHRI are planted in sterilized soil in screen house A, which inhibits the onset of vectors, and mini tubers of G₀ can be produced about three months later.

After four months dormancy, G₀ is planted in the soil of screen house B and grown about three months. The result is the G₁ tubers.

After four months dormancy, G₁ is similarly planted in the foundation seed field, grown around three months, and produces G₂ tubers (foundation seed). The multiplication should be conducted so that the tubers are not infected with diseases transmitted by seed tubers in each stage.

Meanwhile it should be mentioned that the foundation seed G₂ will be sent to BBU after the Seed Inspection and Certification Office (BPSB) inspects the plants during the growing season as well as the harvested tubers.

Stock Seed Farm (BBU)

Production of G₃
(in stock seed farm)



Stock seed



Using G₂, the stock seed farm produces G₃, thus preventing infection of seed borne diseases around three months.

The plants during growing season, as well as the harvested tubers, are inspected by BPSB, and then are distributed to seed growers with proper certification.

Certified Seed Grower

Production of G₄
(Extension seed farm)



Extension seed



G₄ (extension seed potatoes) is produced from G₃, thus preventing infection of seed borne diseases in the extension farm around three months. The plants during growing season, as well as the harvested tubers should be inspected by BPSB, and they then can be distributed to seed users with proper certification.

For the benefit of potato cultivation and increased yield, as we have seen here, the seed potatoes systematically multiplied by the national project are of a high quality as healthy, with strong germinability, and not inferior to imported seed potatoes.

To increase the yield of potatoes, it is important that the seed potatoes supplied by this project be used appropriately, especially with the use of good cultivation methods adapted to region, climate and soil.

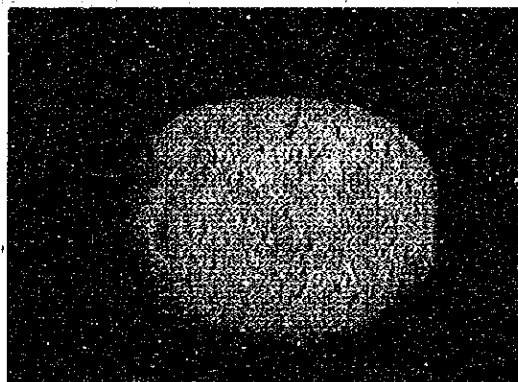
Seed Inspection and Certification Service (BPSB)



*Field inspection
(Viruses, ring rot, bacterial wilt
late blight, aphid, etc.)*



*Post-harvest inspection
(Bacterial wilt, ring rot, soft rot,
scab, late blight, root-knot nematode, etc.)*



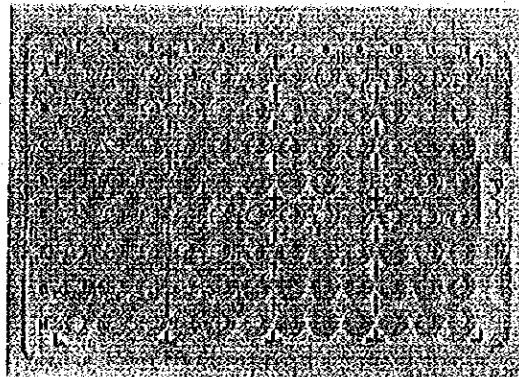
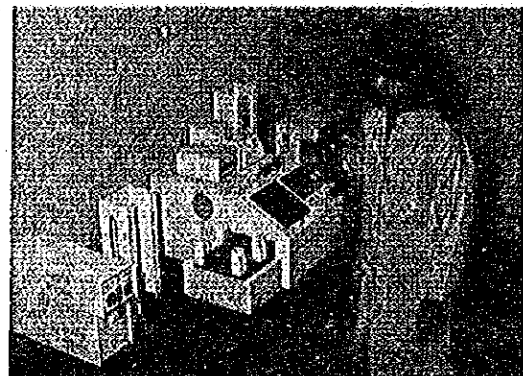
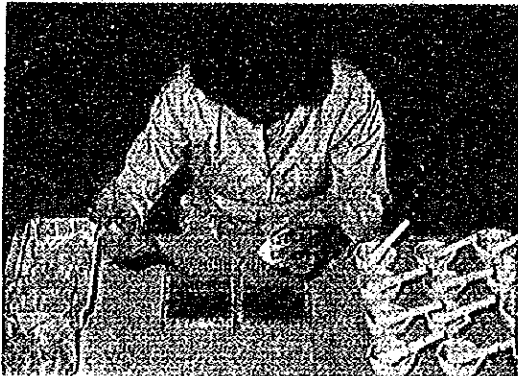
Variety "Granola"

Detection method of viruses in laboratory

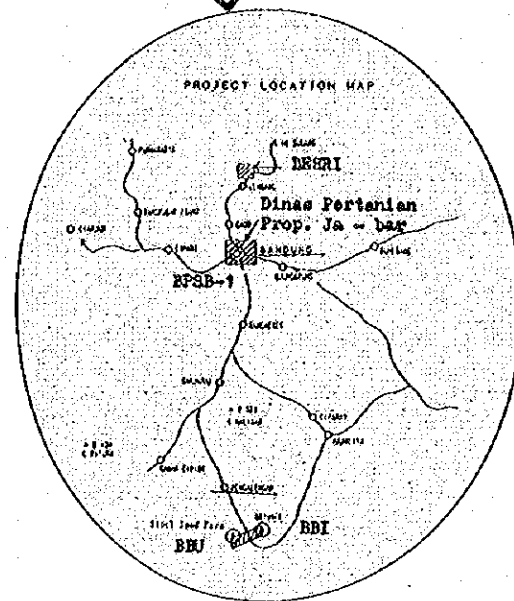
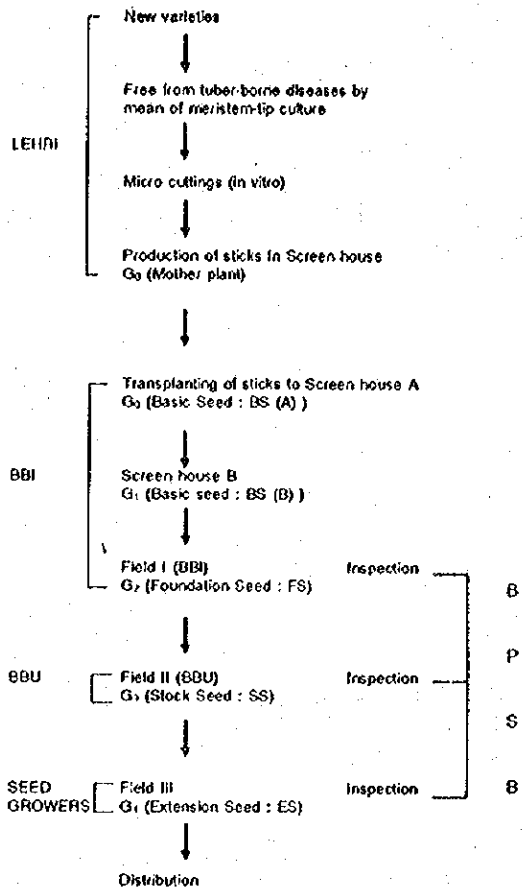
*Indicator host test
(Mechanical inoculation test)*



*ELISA test
(Serological test)*



PROPAGATION SCHEMES OF SEED POTATO IN WEST JAVA



Note :

- LEHRI : Balai Penelitian Hortikultura Lembang (Lembang Horticulture Research Institute)
- BBI : Balai Benih Induk Kentang Pangalengan (Foundation Seed Farm)
- BBU : Balai Benih Utama (Stock Seed Farm)
- BPSB-I : Balai Pengawasan dan Sertifikasi Benih I (Seed Inspection and Certification Service)

SEED POTATO MULTIPLICATION AND TRAINING PROJECT

- Central** : Department of Agriculture
Directorate General of Food Crops & Horticulture
Directorate of Seed Development
(Jl. AUP Pasar Minggu, Jakarta 12520, INDONESIA
P.O. Box 40 / PSM ; Phone: 021-7805201, 7806850)
- Provincial Office** : Agriculture Food Crops Service of West Java Province
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