CHARACTERISTIC AND PATHOGENECITY CHANGING OF *Uromycladium tepperianum* ON *Falcataria moluccana* AFFECTED BY PYROCLASTIC CLOUD FROM MERAPI VOLCANO, IN YOGYAKARTA, INDONESIA

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INTRODUCTION

- *Falcataria moluccana*
- *Adenanthera falcata*
- *Adenanthera falcataria* L.
- *Albizia falcata* (L.)
- *Albizia falcataria* (L.) Fosberg.
- *Albizia moluccana* Miq.
- *Paraserianthes falcataria* (L.)
- (Indonesia : Sengon) is the second preferred species after teak, planted in Indonesia forest.

Planted forest (monoculture)

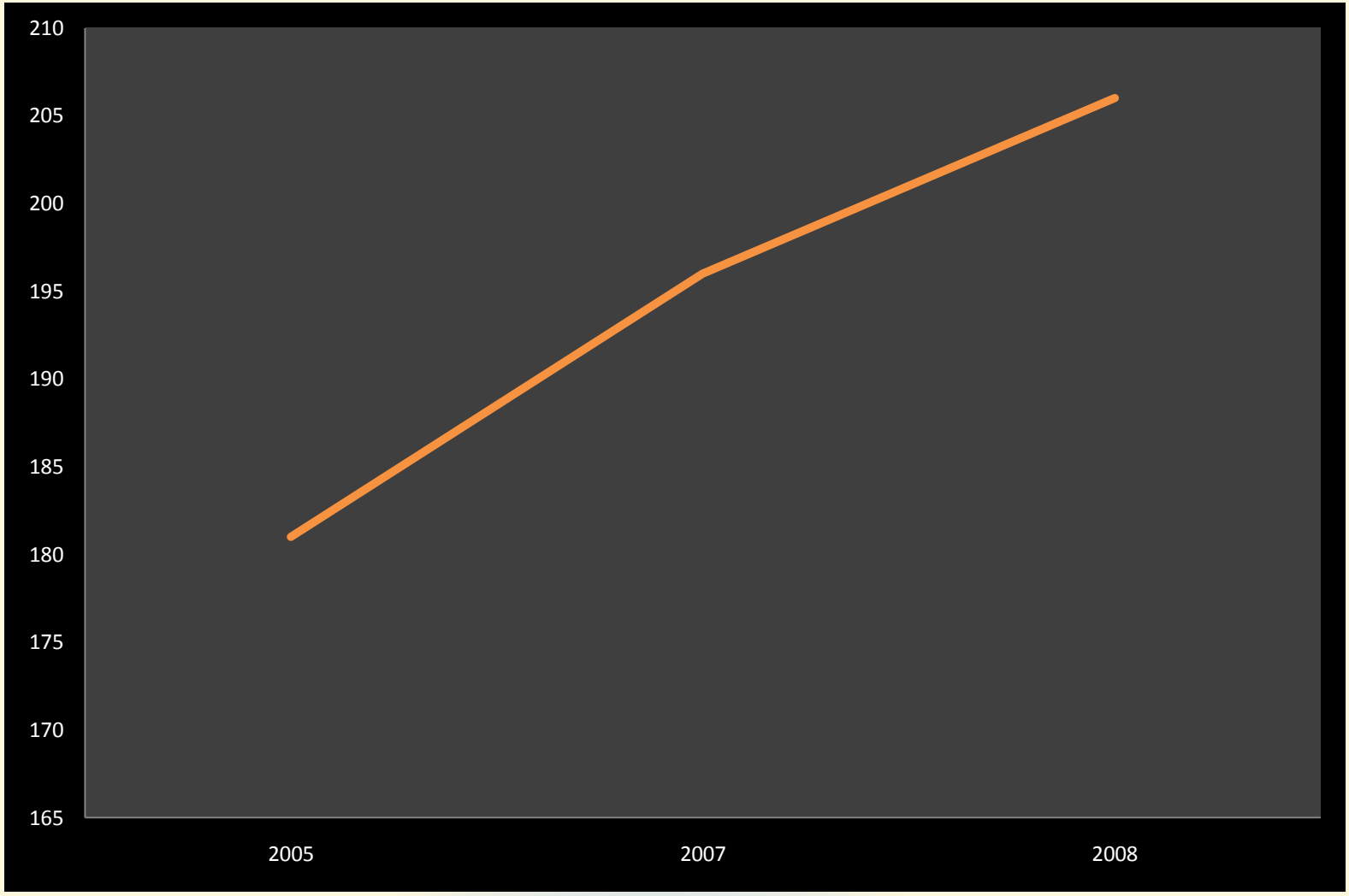
shading trees to tea garden

Shading trees to coffee and orange trees (in Bali island)

mixed with some medicinal and flavor plant in agro forestry system Central Java.

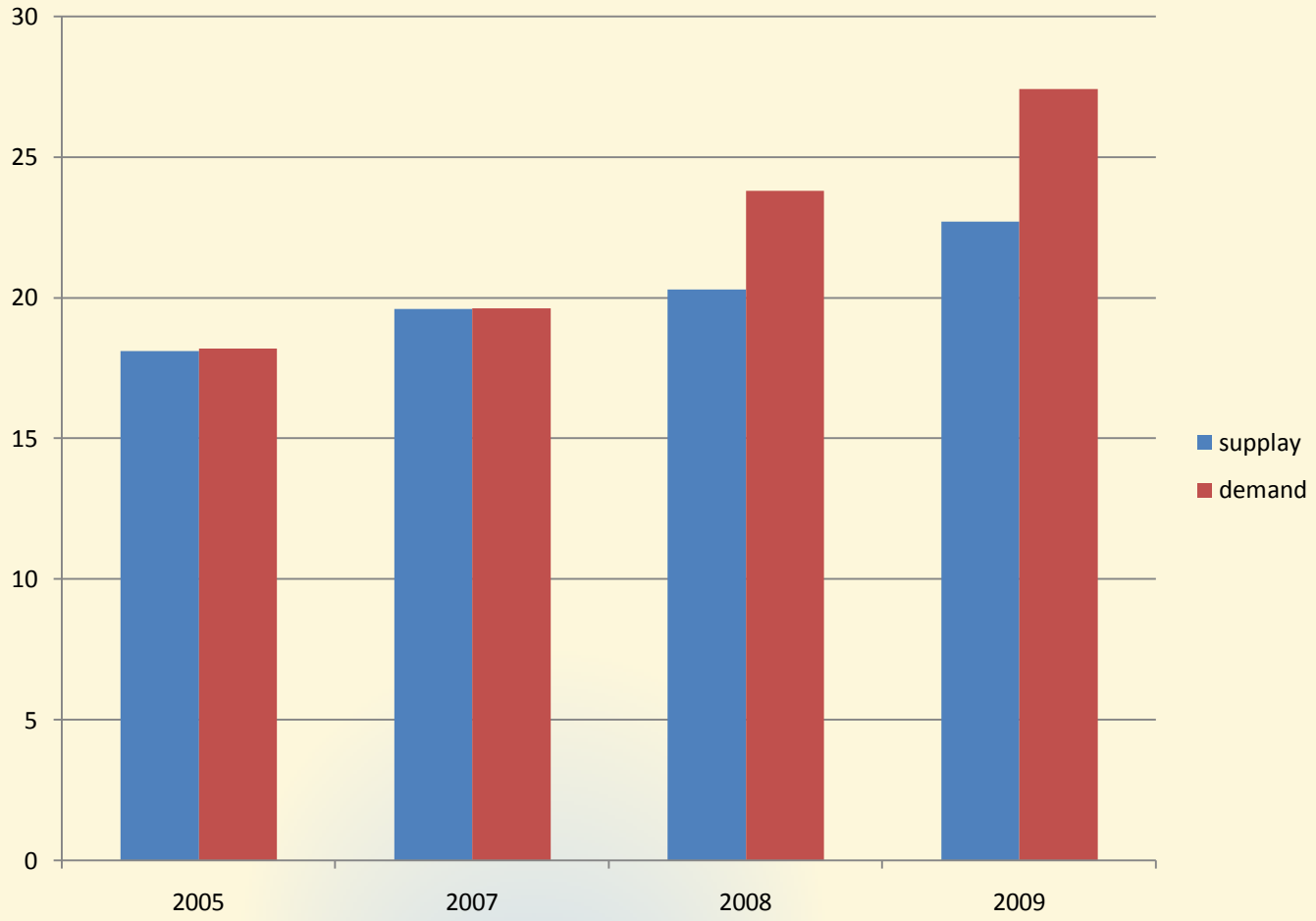
has attracted international interest due to : very fast growing, harvesting at 6 to 8 years old trees

Price of wood (IDR/m3)



Supply and Demand
(in milliom m3/year)

Export to Japan, Middle East, Korea



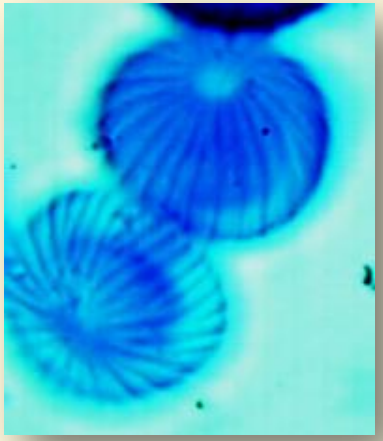
many uses, such as for making
pulp, paper, veneer, plywood, and furniture

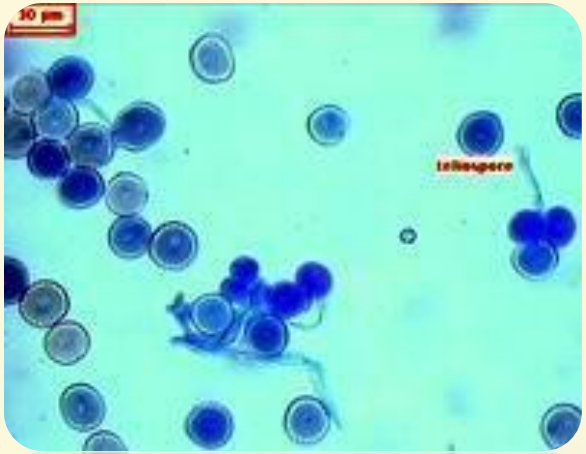
Range of Distribution

Natural Distribution : in Indonesia (Moluccas and Irian Jaya islands), Papua New Guinea, New Britain and the Solomon Islands, ranging from 10˚S to 30˚N (Wagner *et al*., 1999; Richter and Dallwitz, 2000).

exotic tree species planted in :
Brunei, Cambodia, Cameroon, Cook Islands, Fiji, French Polynesia, Japan, Kiribati, Laos, Malaysia, Marshall Islands, Myanmar, New Caledonia, Norfolk Island, Philippines, Samoa, Thailand, Tonga, United States of America, Vanuatu and Vietnam (WAC, 2005).

(2005) Gall rust caused by *Uromycladium tepperianum* is definitely serious and devastating, damaging and killing seedlings in nurseries and trees

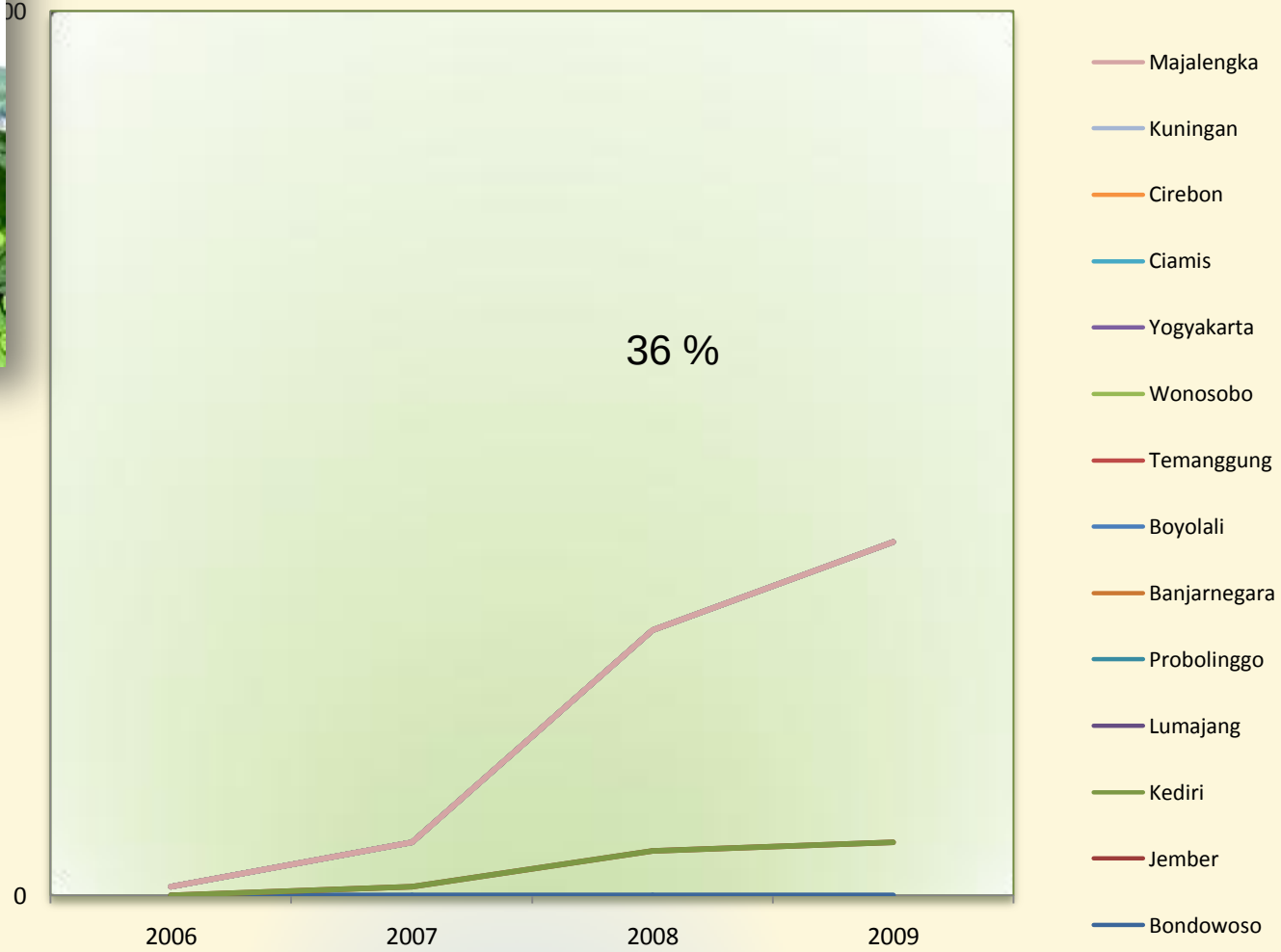




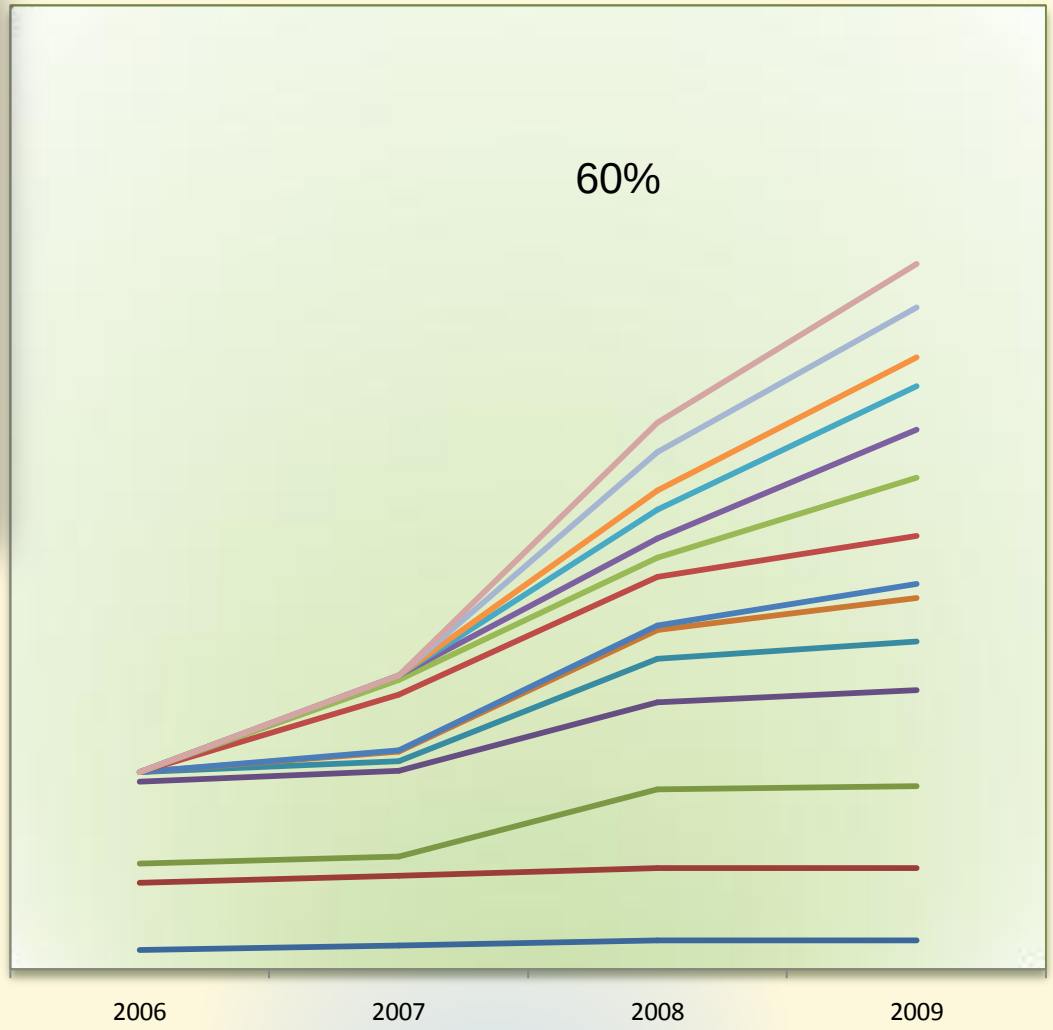
Known distribution at the South East Asia


GREATER
SUNDA
ISLANDS
Java Sea
BORNEO
Microsoft MapPoint
Tambak
Sangkapura
SUNDA
INDONESIA
ISLANDS
Jakarta
Kandanghaur
Indramayu
Bogor
Jatibarang
Cirebon
Pekalongan
Kudus
Rembang
Pati
Blora
Tuban
Ambuntentimur
Cibadak
Bandung
JAWA BARAT
Kuningan
Semarang
JAWA TENGAH
JAWA TIMUR
Sumenep
Kawali
Bojonegoro
Surabaya
Tasikmalaya
Ajibarang
Purwokerto
Surakarta
Pasuruan
Probolinggo
Pameutingan
Cilacap
Yogyakarta
Klaten
Kediri
Malang
Wonosari
Keras
Jember
Blitar
Pacitan
Lumajang
JAVA
Genteng
INDIAN OCEAN
Java Trench
©2003 Microsoft Corp.
5°
6°
7°
8°
9°
10°
108°
109°
110°
111°
112°
113°
114°

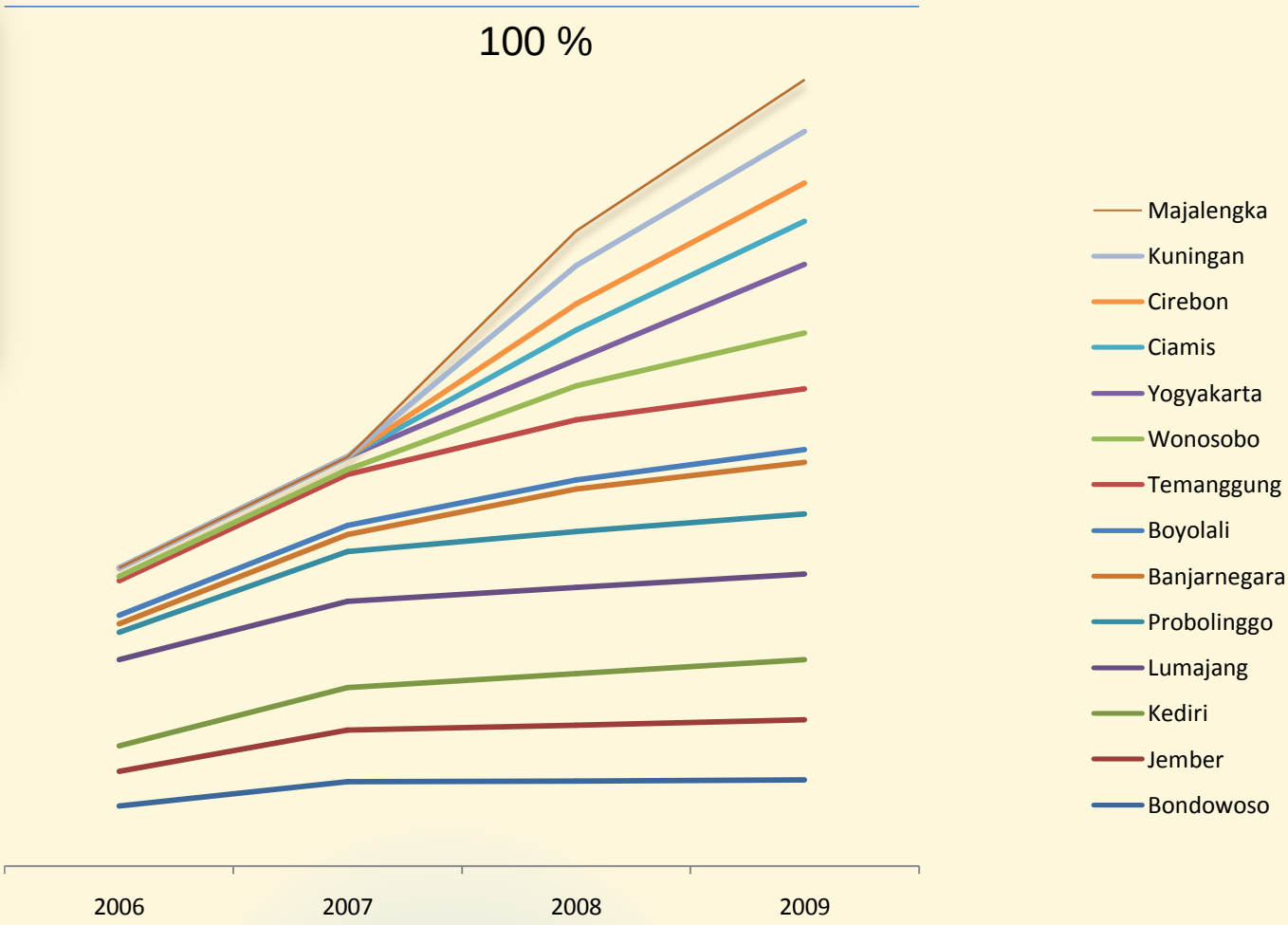
Gall rust disease incidence (%) below 300 m a.s.l



Gall rust disease incidence (%) between 300 to 500 m a.s.l



Gall rust disease incidence (%) above 500 m a.s.l

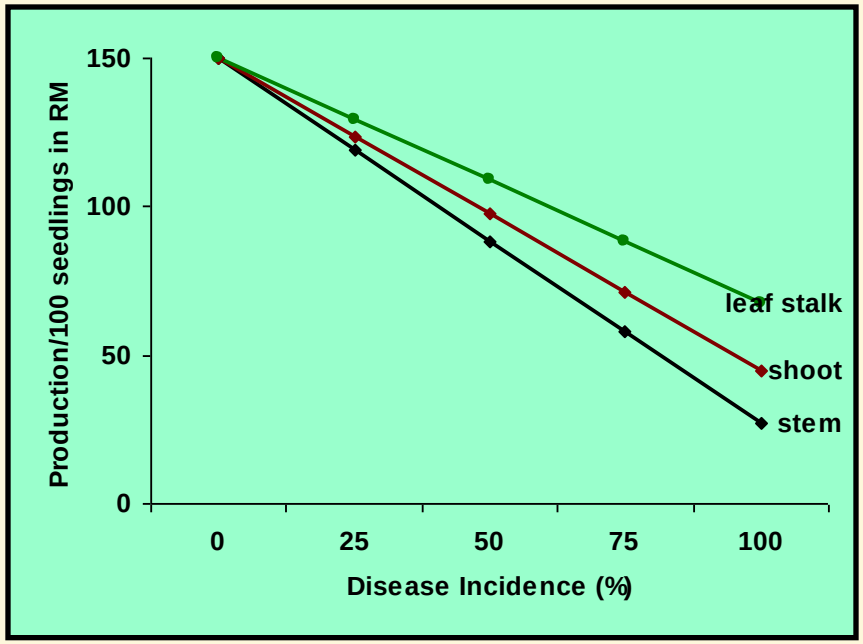



10
11
13
21
19
18
17

Acacia decurens
Paraserianthes lopantha
Caliandra Sp.

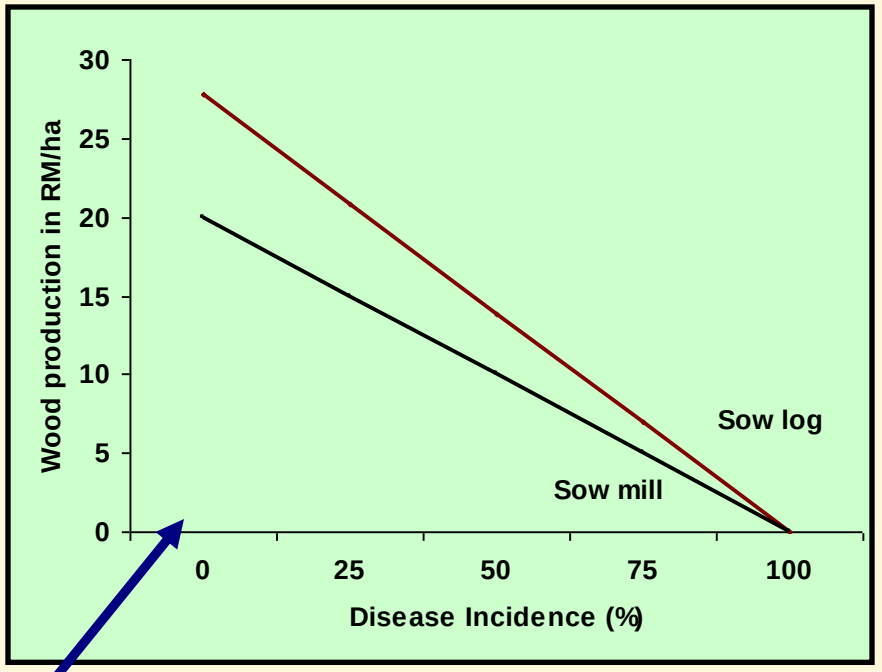
The effect on production

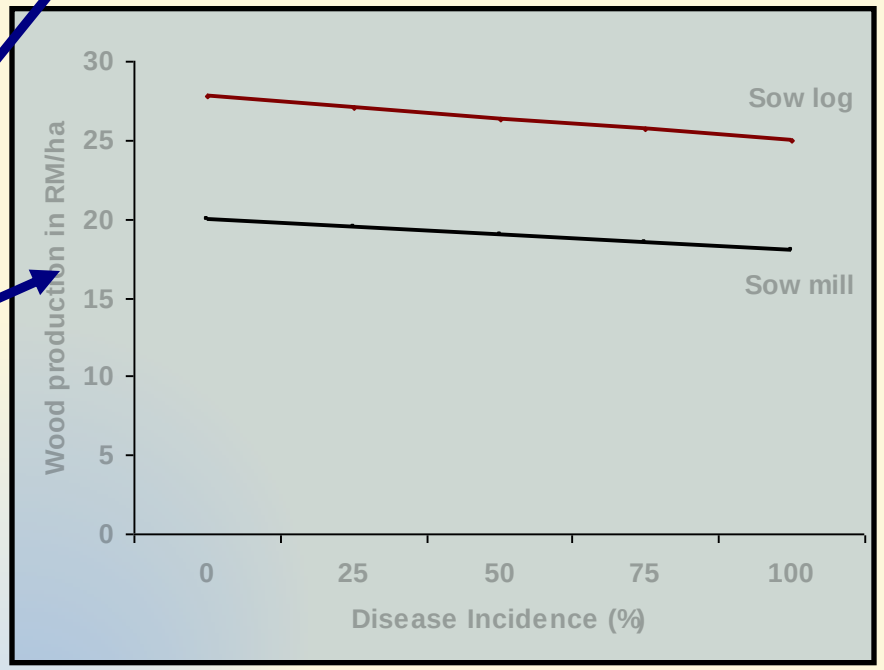
On seedlings



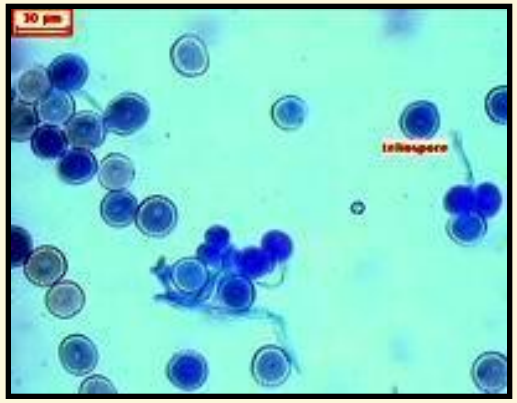
On 1 to 3 years old of young trees

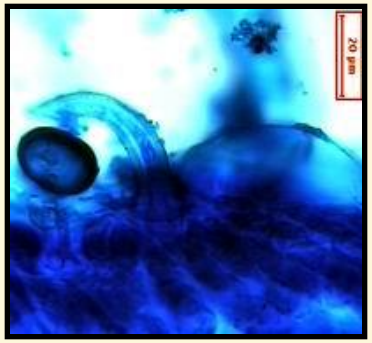
On 4 to 7 years old of matured trees

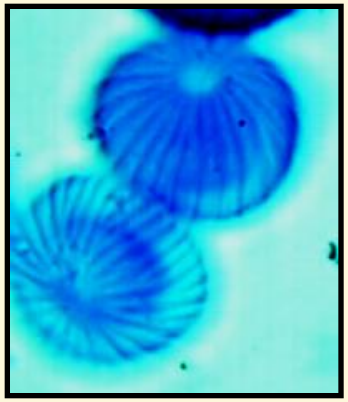


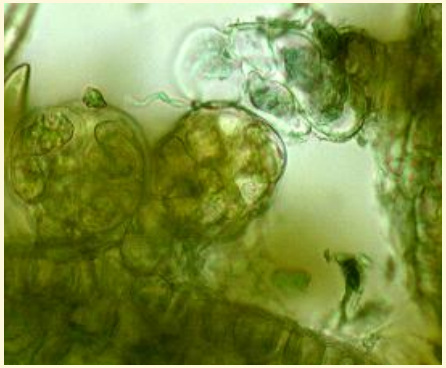


Mode of infection

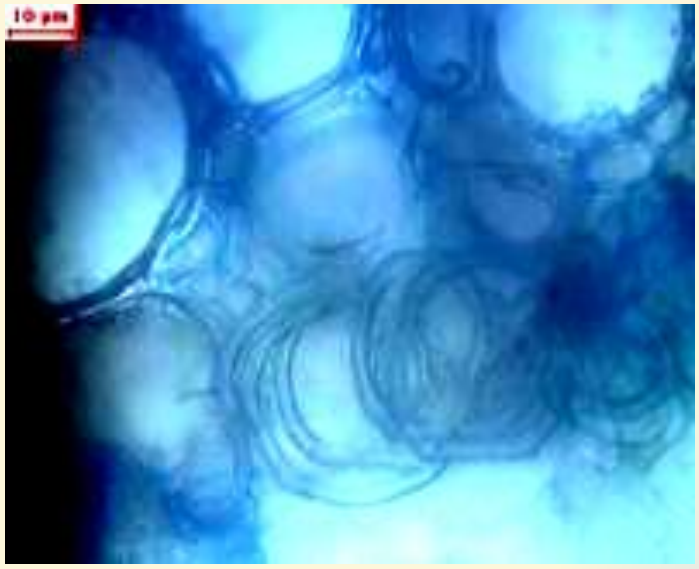


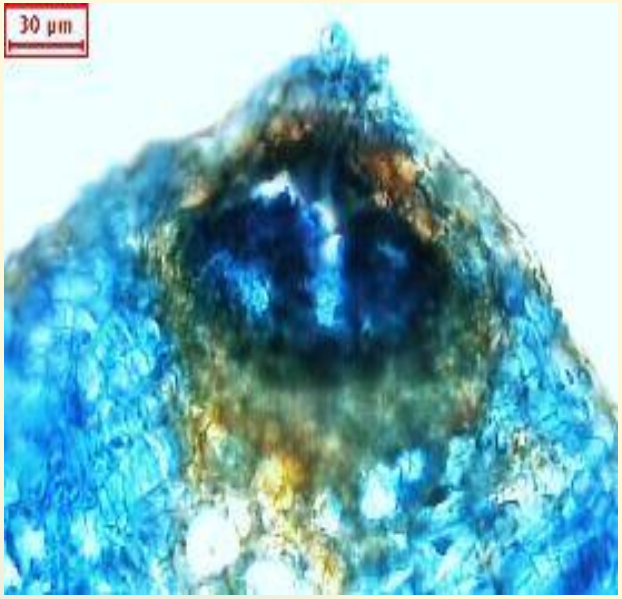







30 µm


10 µm

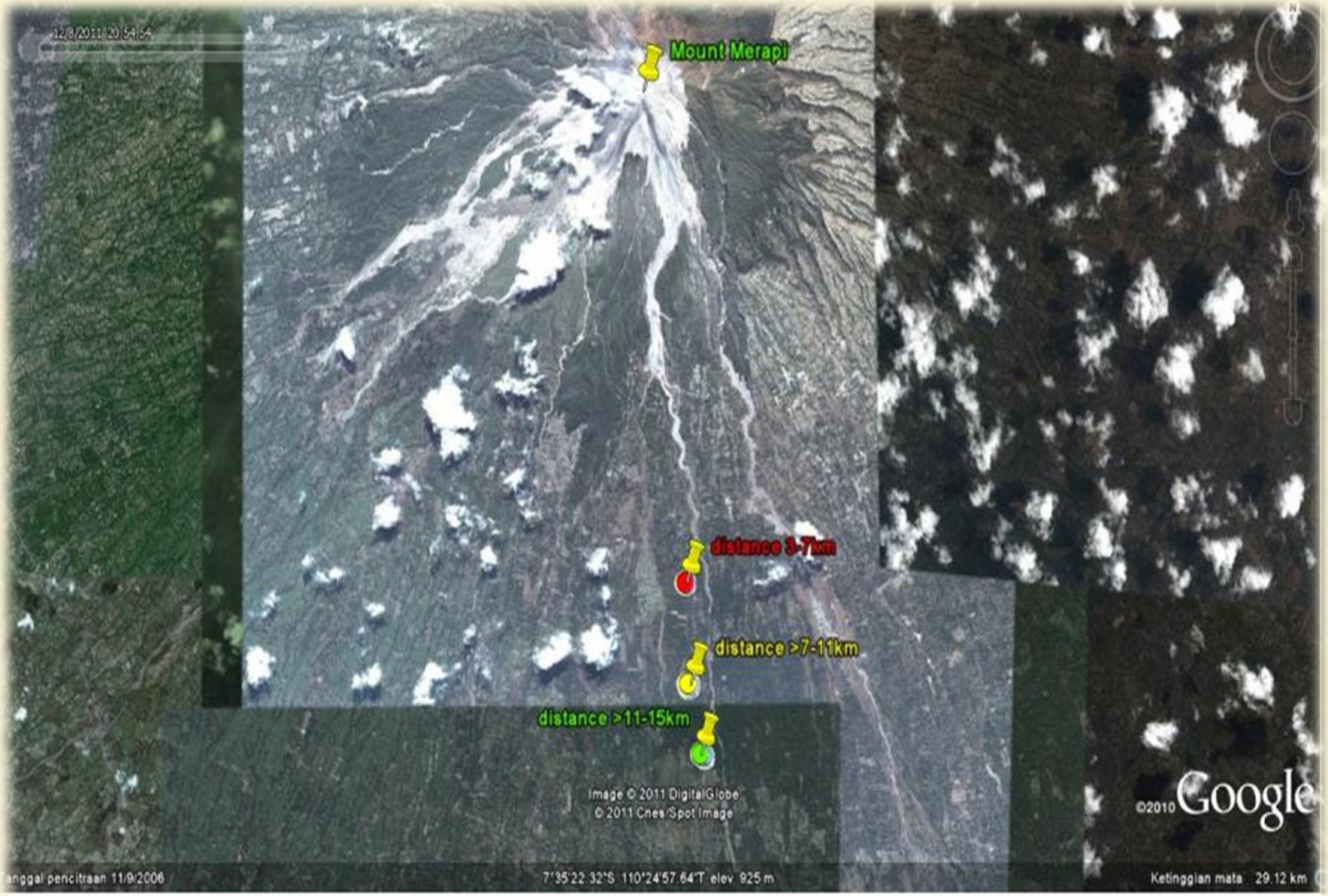

30 µm


2 mm

Merapi Eruption in October 2010

MERAPI ERUPTION (continued)

- Last eruption (October 2010) = biggest explotion for 200years
- Impacts many sectors, such as
- Social = damaged 14 villages including the community forest
- Ecology = local climate change, forest burning, air pollution, etc
- Economy = material loses about $590million


Mount Merapi
distance 3-7km
distance >7-11km
distance >11-15km
Image © 2011 DigitalGlobe
© 2011 Cnes/Spot Image
©2010 Google
anggal pencitraan 11/9/2006
7°35'22.32"S 110°24'57.64"T elev 925 m
Ketinggian mata 29.12 km

GREEN AREA

- Area which undamaged by Mount Merapi Eruption (Pyroclastic cloud and Lava)

BORDER AREA

- Area which indirectly damaged by Mount Merapi Eruption (Pyroclastic cloud and Lava)

FIRE AREA

- Area which directly damaged by Mount Merapi Eruption (Pyroclastic cloud and Lava)

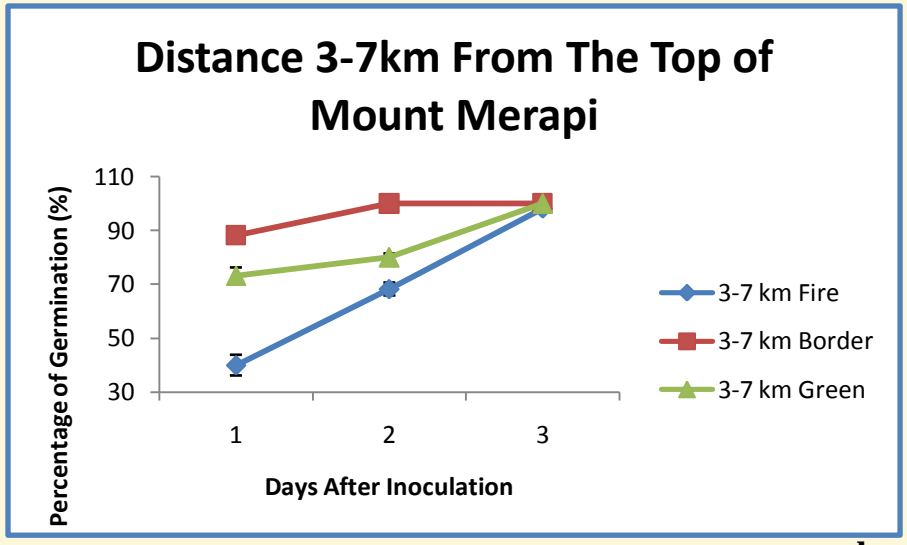
Inoculum source for artificial inoculation

Fire

Border

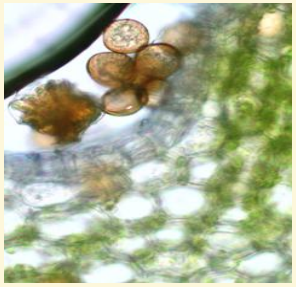
Green

Percentage of Germination

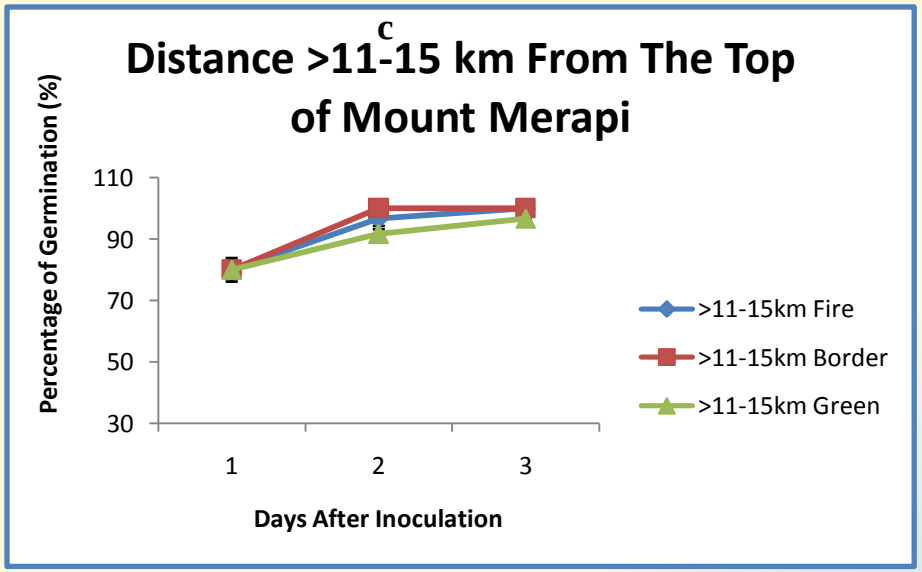


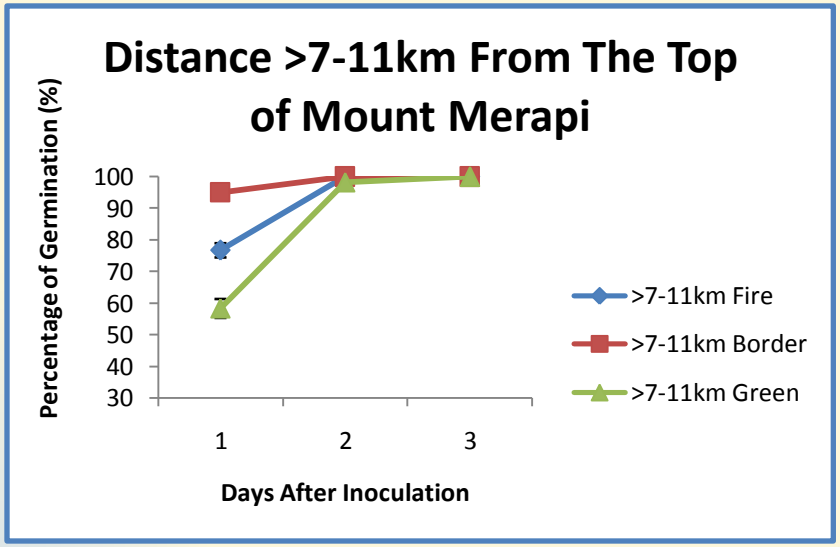
a

b

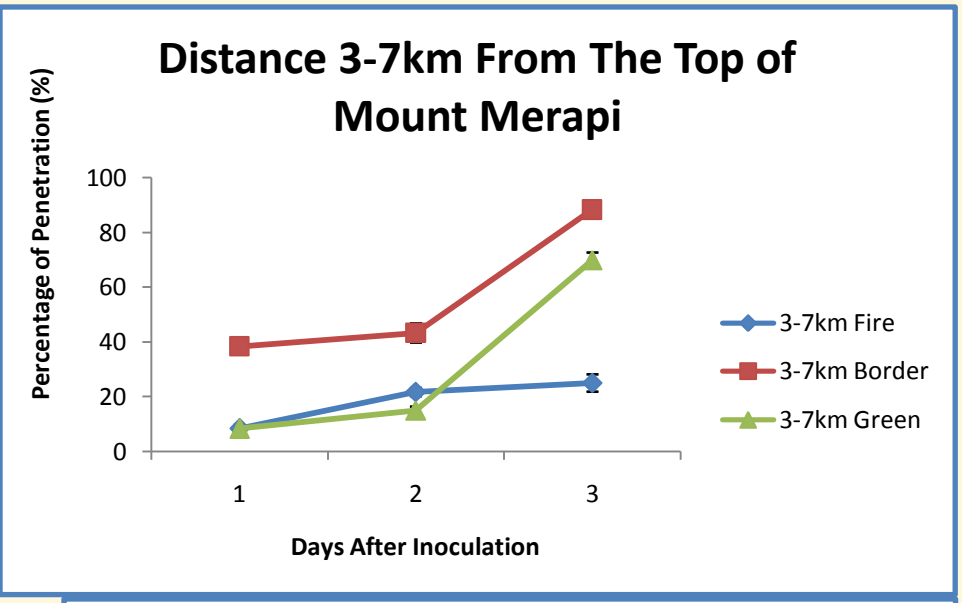


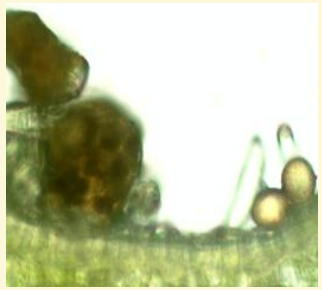
c

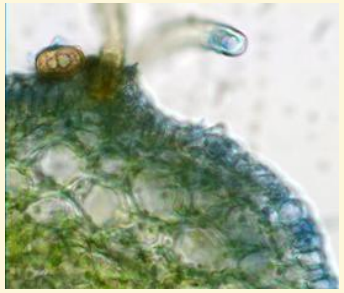


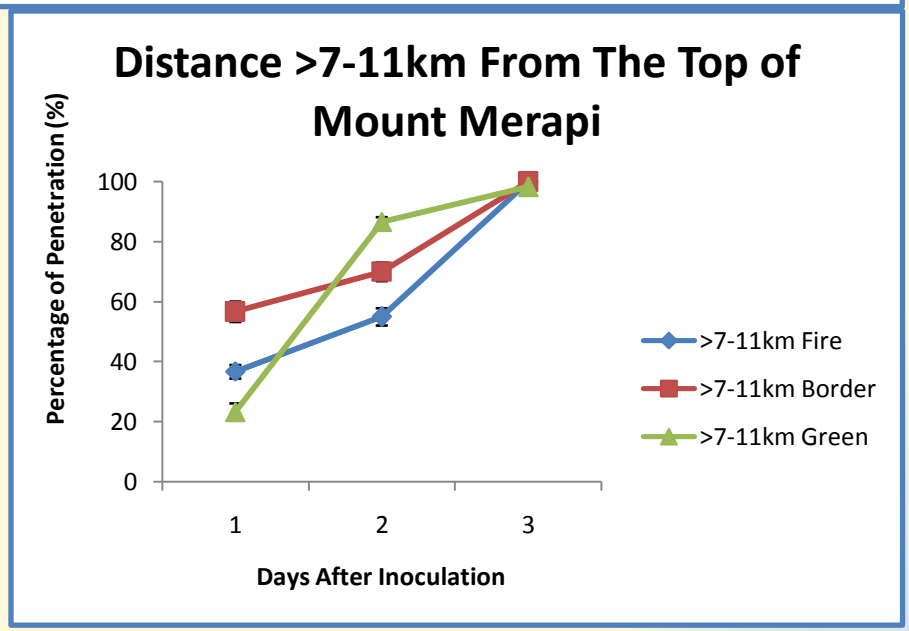


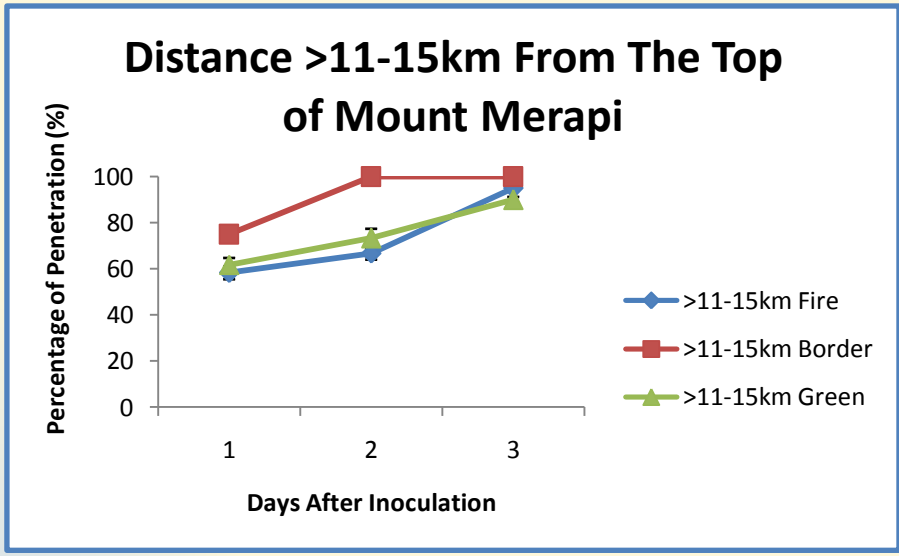
Percentage of Penetration



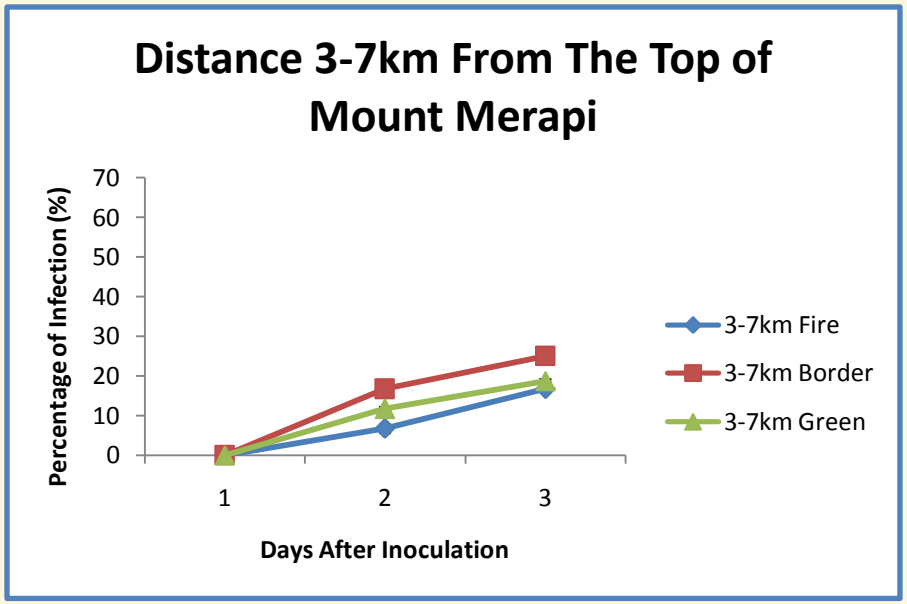


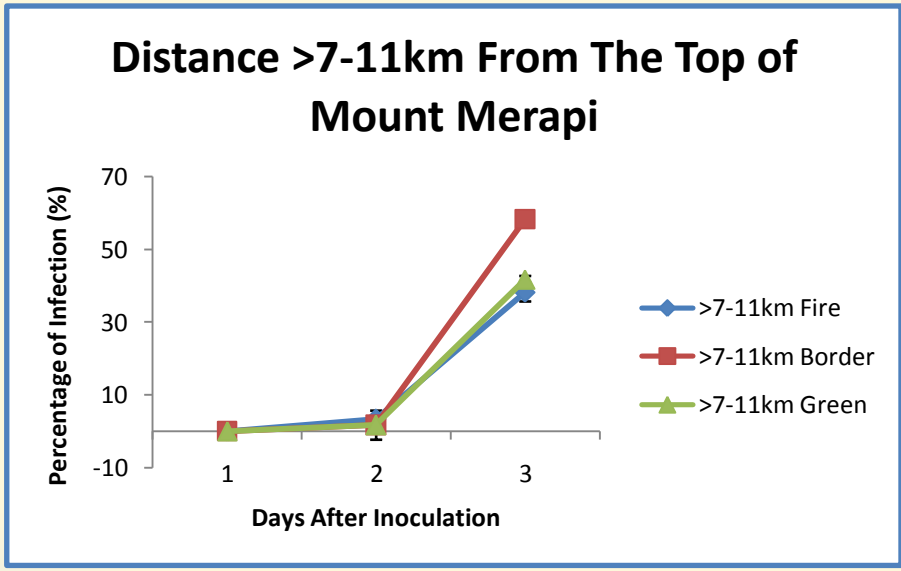


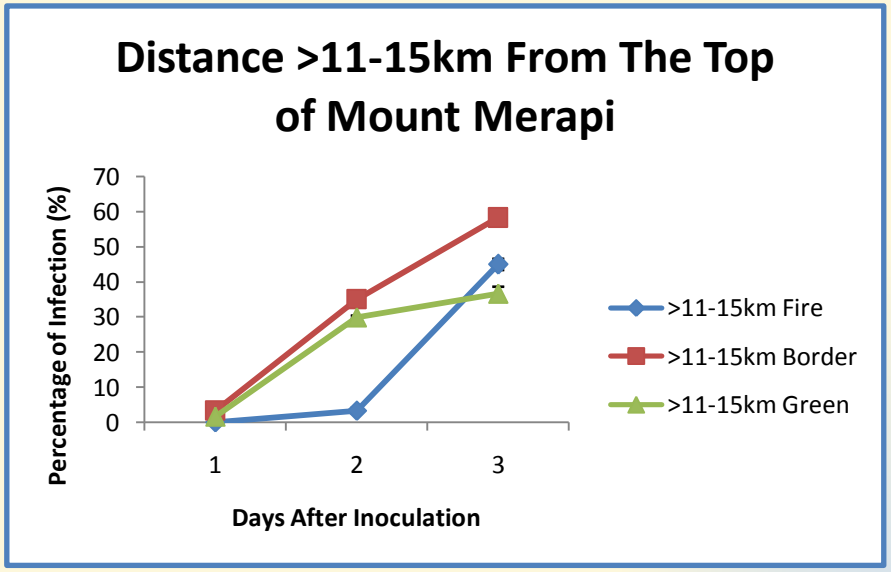


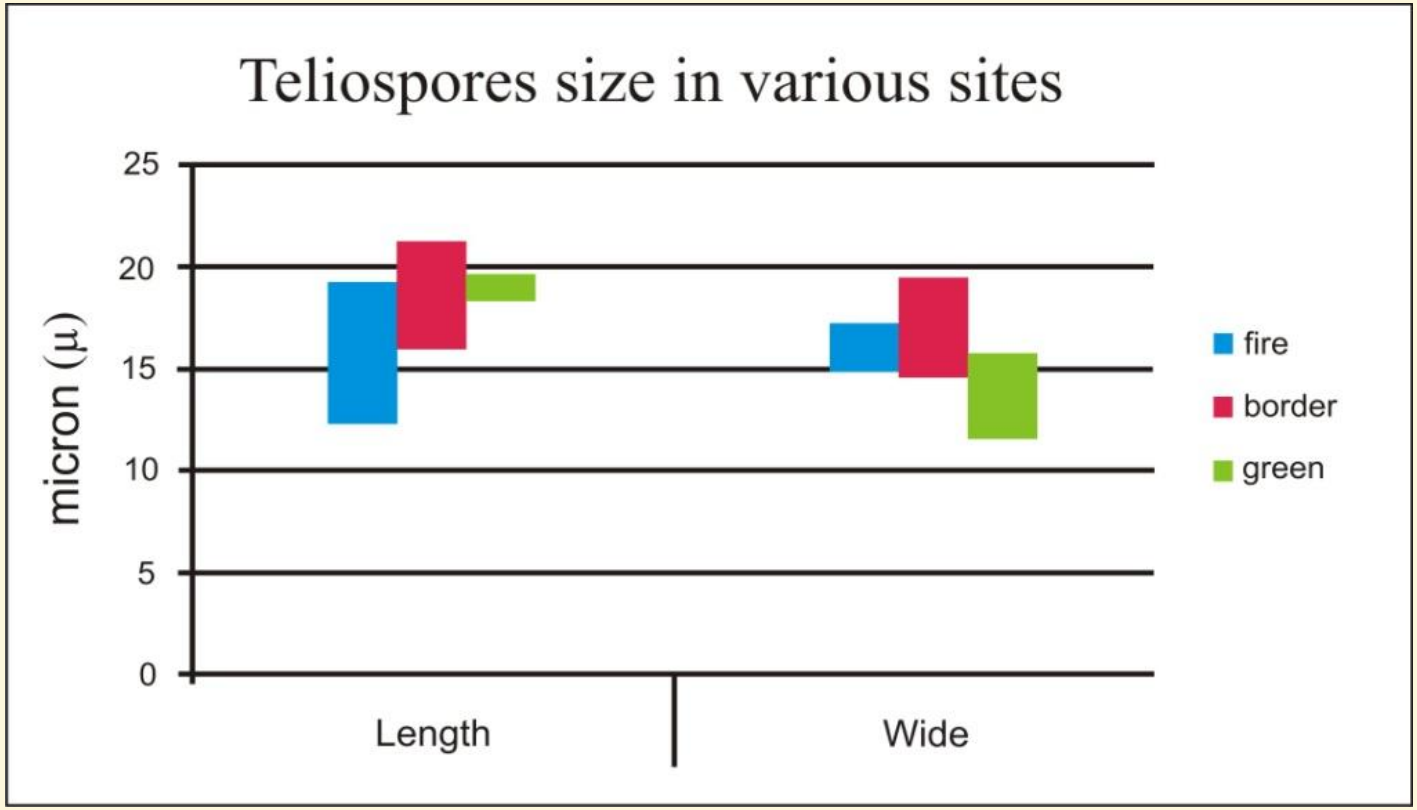


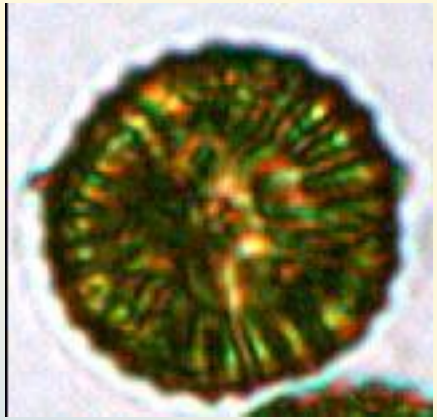
Percentage of Infection








Teliospores size in various sites
25
20
15
10
5
0
micron (µ)
Length
Wide
fire
border
green



The Characteristic of Gall Rust Diseases in Mount Merapi Area

Distance	Location	Color	Texture
3 – 7 km	Fire	Dark brown	Crumbly
3 – 7 km	Border	Nut brown	Soft
3 – 7 km	Green	Nut brown	Soft
>7-11 km	Fire	Brown grey	Hard but crumbly
>7-11 km	Border	Sorrel	Soft
>7-11 km	Green	Nut brown	Hard
>11-15 km	Fire	Brown grey	Hard but crumbly
>11-15 km	Border	Sorrel	Soft
>11-15 km	Green	Sorrel	Soft

Distance 3 – 7 km from the top of Mount Merapi

Fire Area

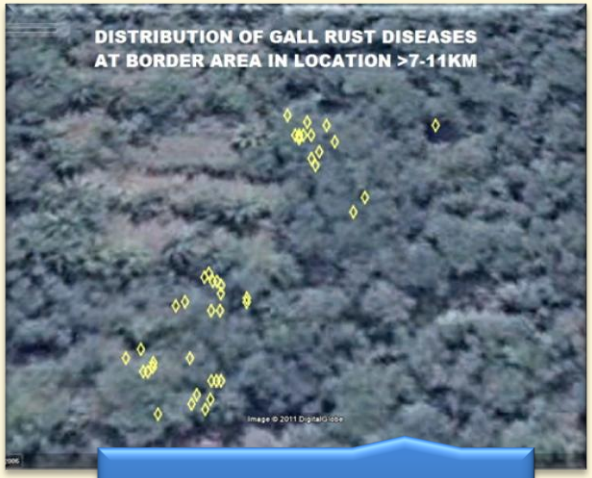
Border Area

Green Area

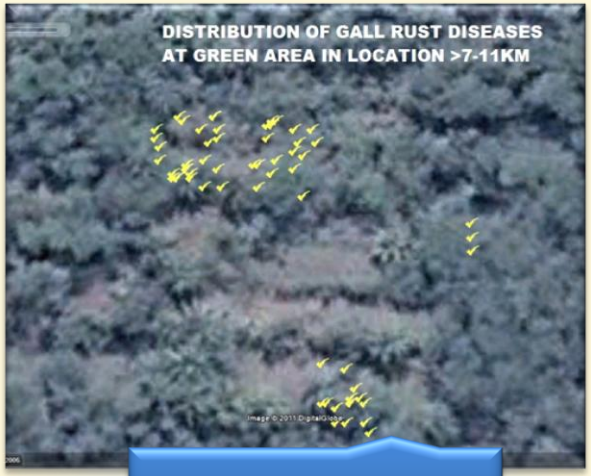
The trees which were infected by Gall Rust diseases

Distance >7 – 11 km from the top of Mount Merapi

Fire Area



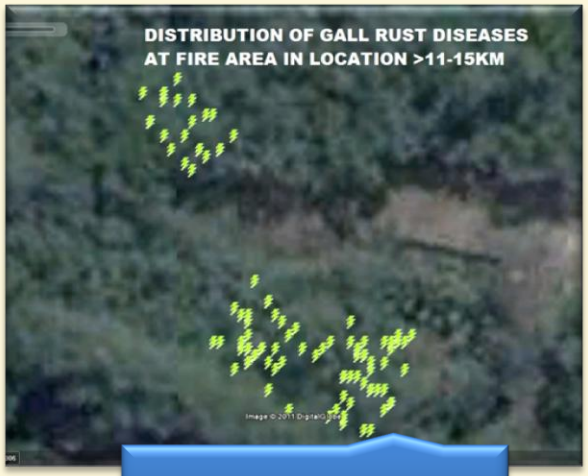
Border Area



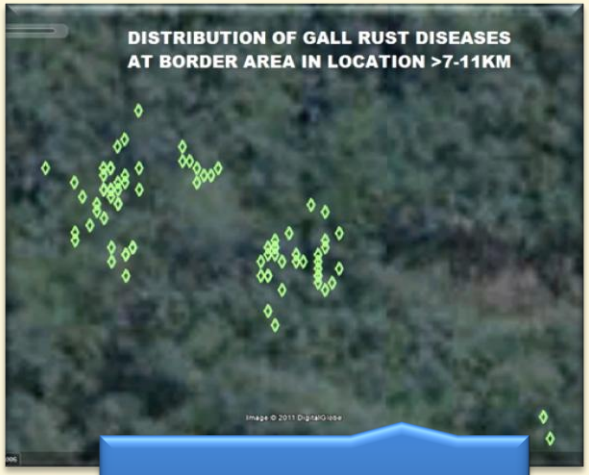
Green Area

The trees which were infected by Gall Rust diseases

Distance >11 – 15 km from the top of Mount Merapi



Fire Area



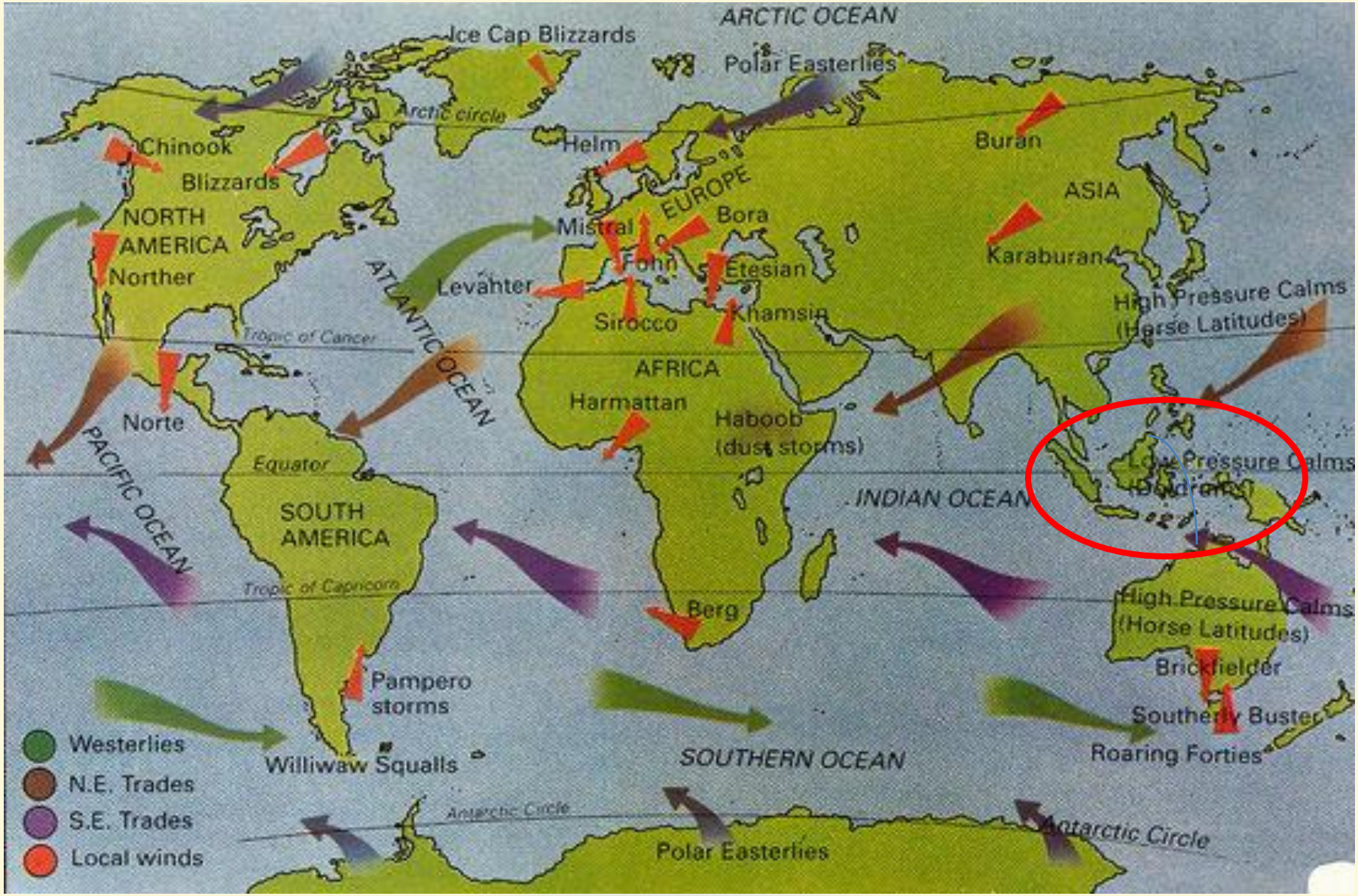
Border Area

Green Area

The trees which were infected by Gall Rust diseases

How to Mitigate ?

Use Resistance provenances or progenies
Eradicate?
Restricted planting ?


ARCTIC OCEAN
Ice Cap Blizzards
Polar Easterlies
Arctic circle
Chinook
Blizzards
NORTH AMERICA
Norther
Helm
EUROPE
Mistral
Bora
Foehn
Etesian
Levanter
Sirocco
Khamsin
Buran
ASIA
Karaburan
High Pressure Calms (Horse Latitudes)
ATLANTIC OCEAN
Tropic of Cancer
AFRICA
Harmattan
Haboob (dust storms)
Norte
PACIFIC OCEAN
Equator
SOUTH AMERICA
INDIAN OCEAN
Low Pressure Calms (Doldrums)
Tropic of Capricorn
Berg
High Pressure Calms (Horse Latitudes)
Brickfielder
Southerly Buster
Roaring Forties
Pampero storms
Williwaw Squalls
SOUTHERN OCEAN
Antarctic Circle
Polar Easterlies
Antarctic Circle
Westerlies
N.E. Trades
S.E. Trades
Local winds

Future programme

Looking for cooperation with researcher who interested on :

1. DNA detection on *U. tepperianum* from different legume species, location and site
2. Isolation and identification of chemical compound that produce by the rust fungus and host that responsible promoting the gall
3. Screening and selection for resistance

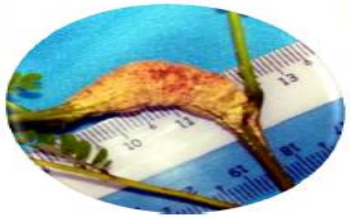
IUFRO APAFRI PERHUTANI Riaupulp

SECONDS ANNOUNCEMENT

The Impacts of Climate Change to Forest Pests and Diseases in the Tropics

IUFRO International DISEASES AND INSECTS OF TROPICAL FOREST TREES
(Working Party Conference IUFRO 7.02.07)

October 8th - 10th, 2012 Yogyakarta, Indonesia


IMPORTANT DATES

Abstract Submission	30th June 2012
Abstract Submission for applying sponsorship	20th June 2012
Notification for successful applicants sponsorship	25th June 2012
Full Paper Submission	31st july 2012
Early-registration Payment	30th April - 31st july 2012
Late-Registration Payment	1st August- 30th September 2012