

EARLY BLIGHT OF POTATO

Early Blight of Potato

- **Disease is world wide**
- **In India – Assam, Tripura, , West Bengal, Bihar, UP, UK, Haryana, Punjab, HP etc.**
- **More in hilly area**
- **Loss- till 20-50%**

Symptoms

- **Appear before late blight after 4-5 weeks of sowing**
- **Lower leaf first affected & scattered spots**
- **Covered with greenish blue growth of fungus**
- **Later spots – brown & concentric rings**



- **Chlorosis due to alternaric acid**
- **Leaf falling**
- **Black to brown spots on stem**
- **Branches or plant die**
- **Rotting in tubers**
- **Tubers less & small**
- **Starch lacking in tuber**



3



5a



5b









6a



6b



Pathogen – *Alternaria solani*

- **Weak plants more susceptible**
- **Disease is soil & seed borne**
- **Pathogen survive as conidia & mycelium in seed & plant residues**
- **Collateral host – tomato etc.**
- **Fav. - Tem. - 28 - 30° C for conidia germination**
- **R. H. – high**

Systemic Position

Kingdom	–	Mycota/ Fungi
Division	–	Eumycota
Sub division	–	Deuteromycotina
Class	–	Hypomycetes
Order	–	Hypomycetales
Family	–	Dematiaceae
Genus	–	<i>Alternaria</i>
Species	–	<i>solani</i>

Conidia of *Alternaria solani*



Disease Management

- **Removal of plant residues**
- **Crop rotation – 2 yrs.**
- **Spray – Zineb (Dithane M- 45) @ 0.25% or Kavach 75
WP @ 0.2% at 10 – 15 days interval**
- **Dis. Res. Var.- Kuphri Alankar, Kuphari Naveen, K.
Jeevan, K. Sinduri**

Late Blight of Potato

All potato growing areas of the world

The disease was reported:

- 1830 - 40 - Andies (Europe & USA)
- 1843 - Ireland, England & all Europe
- 1845 - 46 - Irish Famine
- 1870 - 80 - Nilgiri hills
- 1943 - Meerut (UP), India
- Economic loss - till 65%

Symptoms

- Disease appear at flowering or any stage
- Water soaked, light yellow / light green spots
- On lower leaves - **brownish black lesion**
- Leaf blighted
- If temp. is favorable - than cover whole leaf &
- Plant in 1-4 days and plant parts rotted



- **If environment is dry-**
- **Tan colour spot appear**
- **In moist season – blue, grey mycelium**
- **Growth – conidiophore**
- **After leaf falling- rotting in tubers**



(1). Wet rot –(i). water secretion

(ii) white growth

(iii) 25 - 45 mm rotting in tuber

(iv). whole potato rot

(2). Dry rot - (i). bluish/black growth

(ii). inner side reddish brown

(iii). 5 -15 mm rotting in tuber

• **Smell from the infected field**

























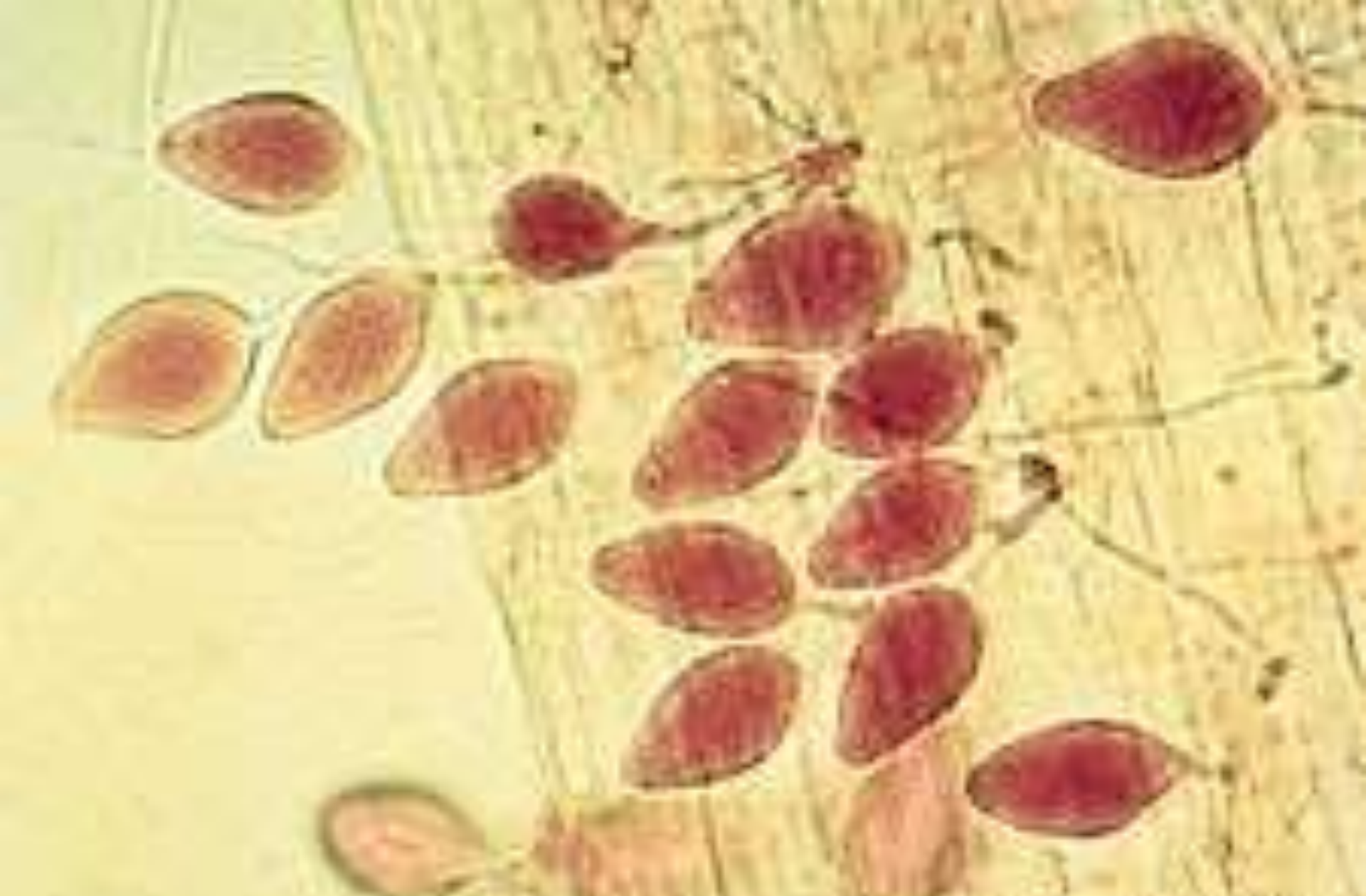


Pathogen – *Phytophthora infestans*

- **Survival - not in Indian plain due to high tem.**
- **Primary source of inoculum – seed in storage**
- **Hills – plant debris**
- **Colletral host - (i). *Solanum nigrum***
 - (ii) *Datura***
 - (iii) *Stramonium* etc.**

Systemic Position

Kingdom	–	Mycota/ Fungi
Division	–	Eumycota
Sub division	–	Mastigomycotina
Class	–	Oomycetes
Order	–	Pernosporales
Family	–	Pythiaceae
Genus	–	<i>Phytophthora</i>
Species	–	<i>infestans</i>



Sporangia of *P. infestans*

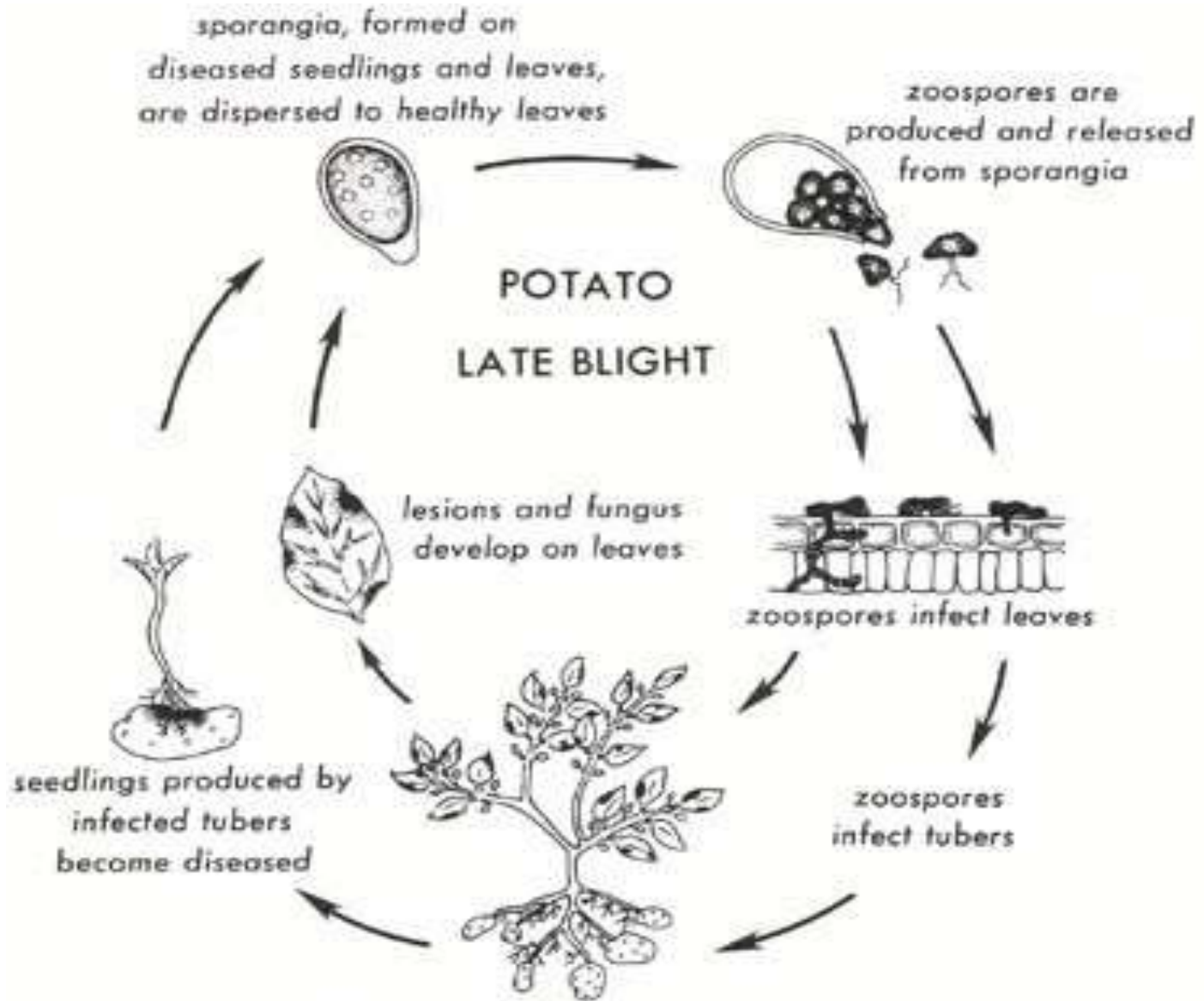
Sporangia of *P. infestans*



Factors responsible for epidemic

- **Night tem. for 4 hrs - below dew point**
- **Minimum tem. - 10° C**
- **Cloudness**
- **Rain for next 24 hrs - at least 0.1mm**

Life cycle



Disease Management

- 1. Use of healthy seed**
- 2. Removal of plant debris (field sanitation)**
- 3. Removal of weeds**
- 4. Harvesting in dry season**
- 5. Harvesting after ripening**
- 6. Remove upper portion before 15 days of harvesting**
- 7. Earthing- 10-15 cm**

8. Balanced fertilization of N₂ & proper irrigation

9. Seed treatment- Ridomil 5% dust -1kg/100 kg seed

10. Storage at 3.5 – 4.4° C

11.Spray- Mencozeb, Dithane Z- 78 - 2.5 kg/ha, 4-6 sprays – 14 days interval or Captafol 8% WP- 2.5 kg/ha, or Metalaxyl 280 gm A.I. + Mencozeb 1.8, 75 %WP (2.5 Kg/ha) – 10-15 days interval

12.Use resistant varieties – Kuphri Badhsaha, K. Alankar, K. Swarna, K. Jeevan, K. Jyoti etc.

Thank You