PEBRINE-O-SCOPE

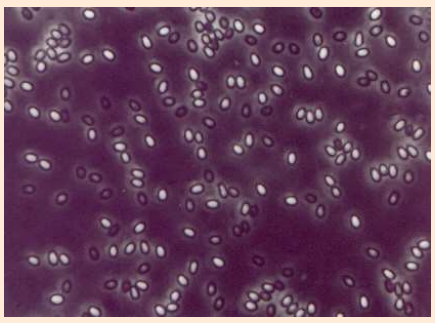
A Microscopic Image Analysis Solution for Pebrine Disease Detection

A Sub-project under the eAgriEn Program

Implementing Agencies:
C-DAC, Kolkata & PRADAN, Jharkhand
100% Funded by Tata Education Trust (TET)

About Pebrine Disease

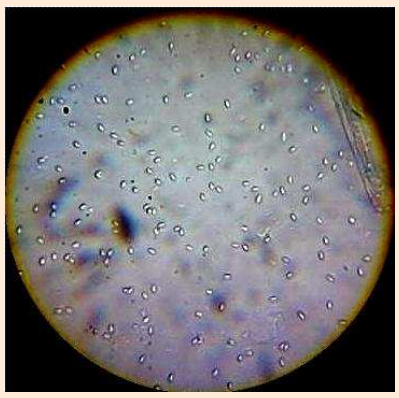
- Caused by a microsporidian parasite NosemaSp
- Infections of the disease range from chronic to highly virulent and can result in complete loss of crop.
- Any of the stages like larvae, moth or faeces can be affected by this pathogen.
- The disease causes due to transovarial (through egg) transmission from mother moth to the progeny
- If a section of cocoons or silkworm larvae have found to be affected by Pebrine disease then all the eggs/ mother moths have to be burnt immediately, otherwise, the disease will affect the whole section rapidly.



Pebrine Spore (under high-end microscope)

Characterizing Features of Pebrine

- ✓ Dumble Shape
- ✓ Size (Area & length)
- ✓ Length and Width Ratio
- ✓ Shininess/ Brightness



Pebrine after image processing

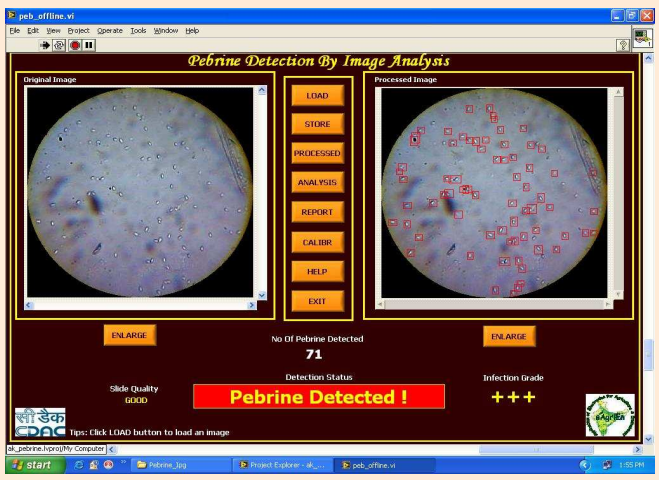
Microscope with camera interface

Problems with manual observation

- Process is tedious & laborious.
- Require experienced manpower.
- Lack of authenticity.
- Not free from human error.

System Features

- ✓ Low cost student microscope with 600X magnification used for analysis.
- ✓ Digital camera with co-axial attachment for image acquisition.
- ✓ PC/ Laptop interfacing using USB port.
- ✓ Graphical user interface, image zooming for ease of operability.
- ✓ Warring with infectious grade.
- ✓ Image analysis with report generation.
- ✓ No external power source required for camera operation.



Software Screen Shot for Pebrine Detection

System operation

- Existing sample preparation methodology should follow.
- A standard microscope should be used. Magnification will be minimum 600 X.
- Slides containing moth larvae slurry will be placed manually under the microscope.
- Digital camera will be attached with the microscope using USB cable.
- A PC will be connected with the digital camera acquire the Images of the object that will be seen in the PC monitor, online.
- Developed software will detect the probable/ suspected spores.

Benefit

- Increase transparency and authenticity.
- Identification of pebrine in large PC monitor is easier.
- Reduce dependency on experienced manpower.

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