EasyPCC，Ver1.1, complied under win64 MATLAB 8.3 (2014a)

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This software package is provided for research purposes only. We hope it will be useful!
It is a new implementation of the algorithm (DTSM) reported in:
Guo W, Rage UK, Ninomiya S: Illumination invariant segmentation of vegetation for time series wheat images based on decision tree model. Comput Electron Agric 2013, 96:58–66
Please use this paper for reference.

The updates and bug fixes can be found via:
http://park.itc.u-tokyo.ac.jp/nino-lab/labhome/PhenotypingTools/EasyPCC.html

This package is for MS Windows ONLY, and it includes:

1). EasyPCC.exe
2). Oceam-model
3). readme.txt
4). splash.png
5). test1.jpg
6). test2.jpg

USAGE:

1. Install the Windows 64-bit version of the MATLAB Complier Runtime (MCR) for R2014a from the MathWorks Web site from:
http://www.mathworks.com/products/compiler/mcr/index.html
Or directly download it from my Dropbox:
https://dl.dropboxusercontent.com/u/59335158/MCRInstaller.exe
For users from Mainland China:
http://pan.baidu.com/s/1dDcXtip (code: 1e9k)

If run EasyPCC without MCR, an error message would be received like:

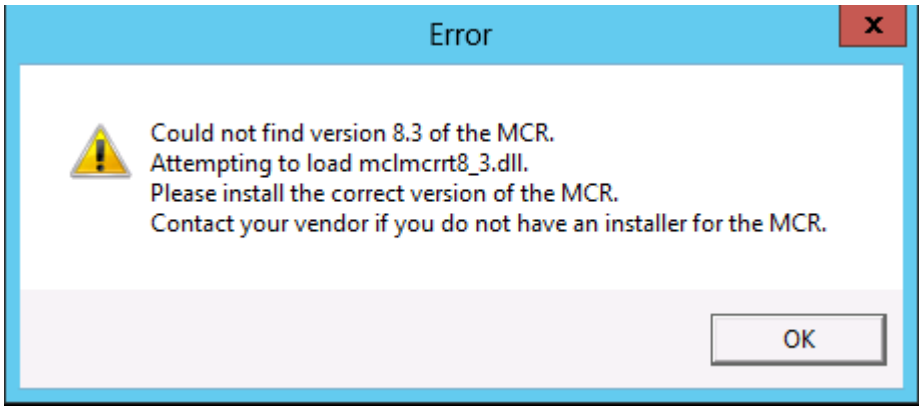


Fig .1 Error message when run EasyPCC without MCR installed

2. After installed the MCR, double click the EasyPCC.exe, the UI should be appear as follow:

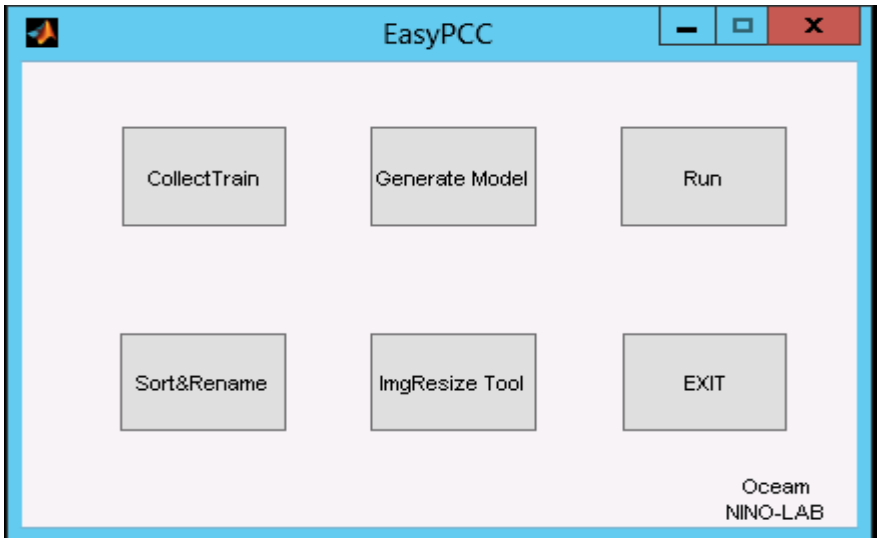


Fig.2

3. Small tools 1: ImgResize Tool

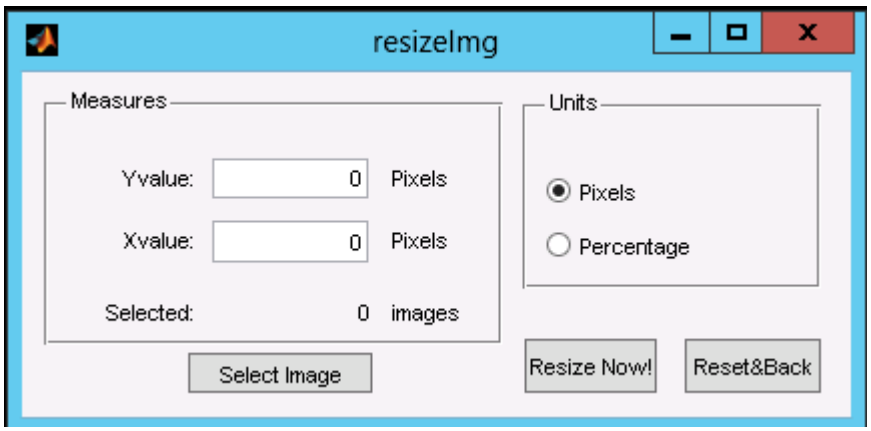


Fig.3-1. Choose the method to resize the image, based on pixel or percentage, input the value.

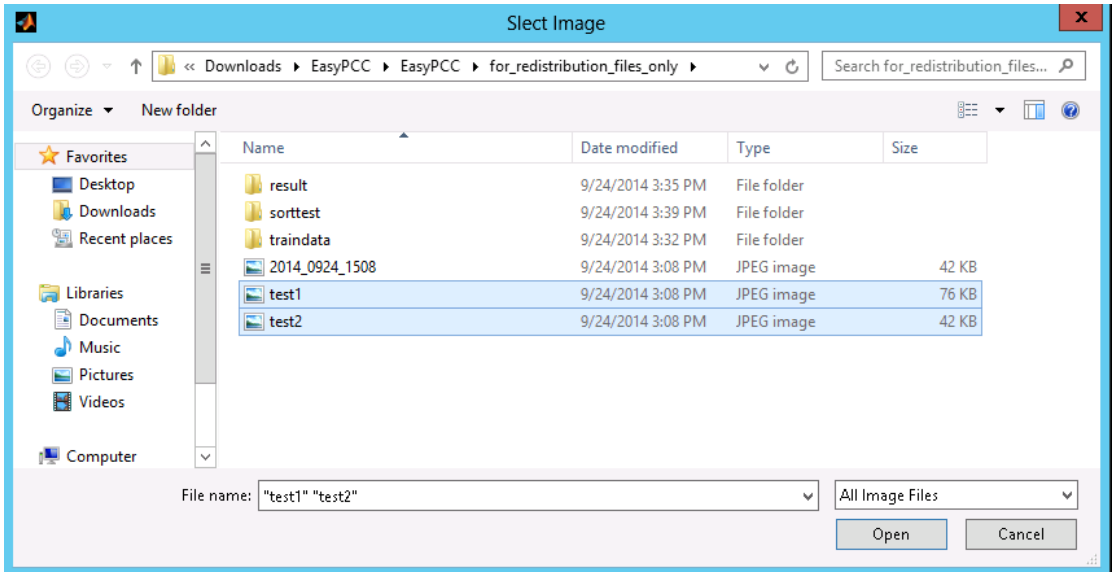


Fig.3-2. Select the image(s) from folder.

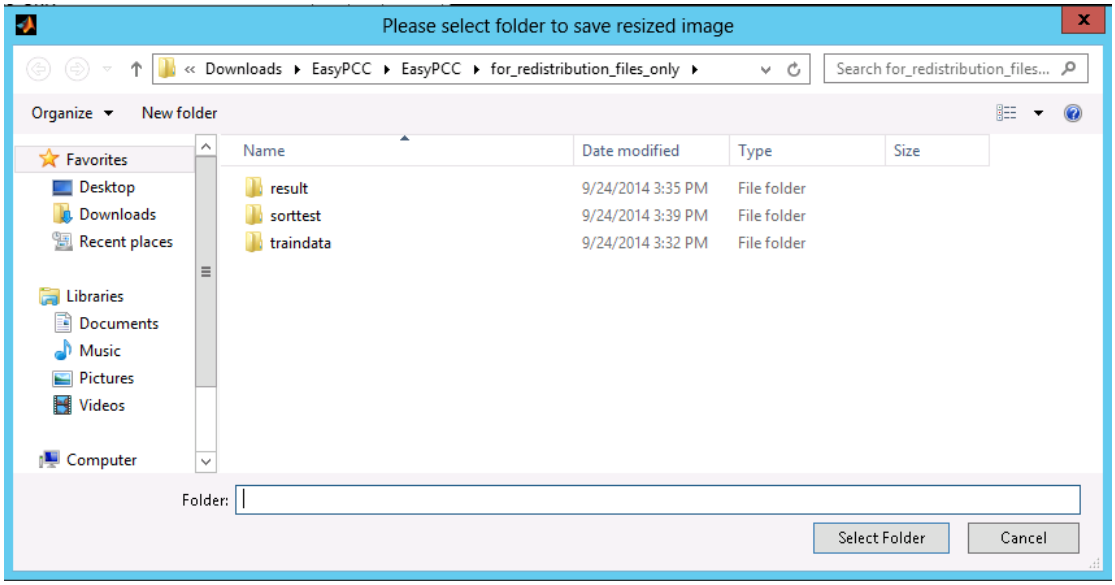


Fig.3-3. Indicate the save path/folder.

Fig.3-4. If finished, a warning message for finishing.

4. Small tools2: Sort&Rename

Rename the images according to shooting data and time from Exif information and sort them.

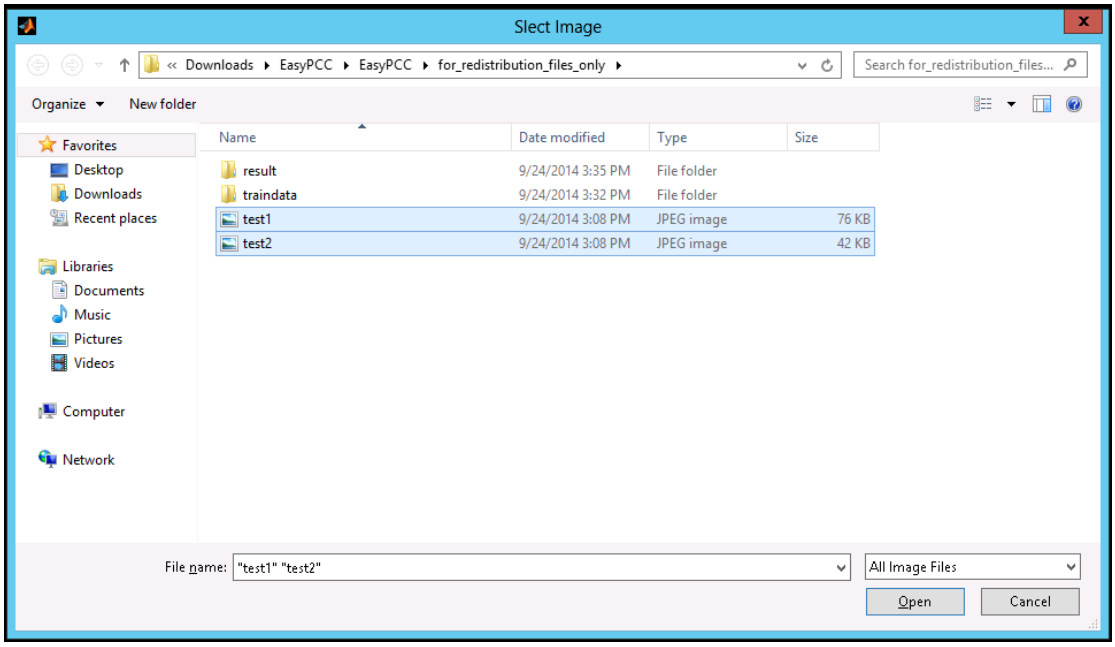


Fig.4-1. Select the image(s) from folder.

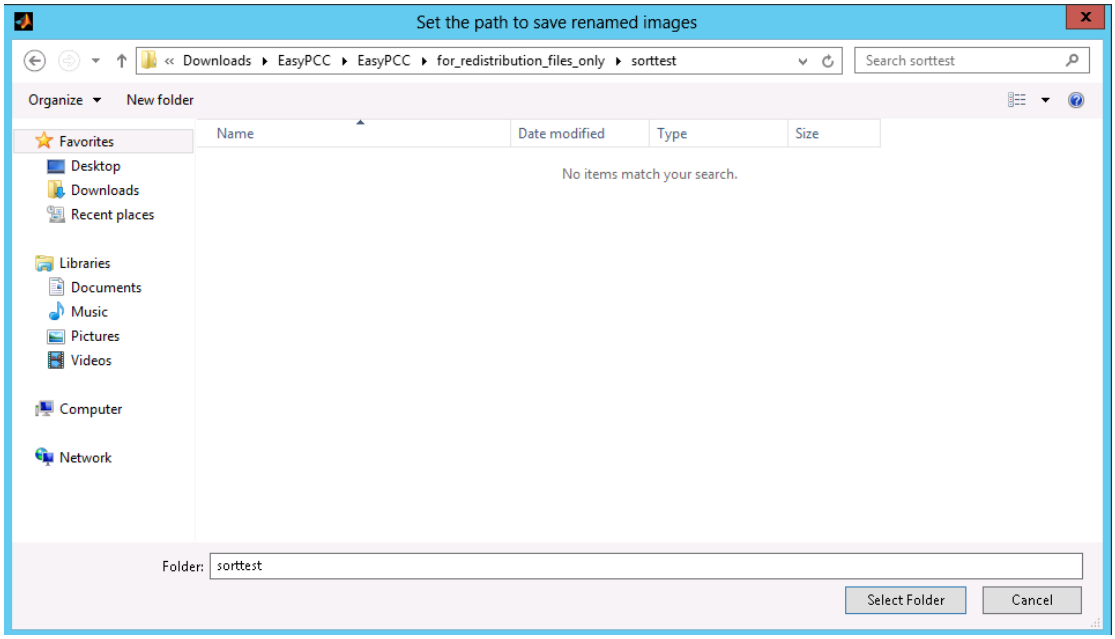


Fig.4-2. Indicate the save path/folder.

5. Train and Run your own DTSM model for vegetation area extraction.

(Added Zoom Function, 2015/03/24)

5.1. Collect you own training data from selected images

a) Suggest create a folder, and then copy the images you are going to use for training data collection. Suggest select the images with variance light conditions from whole image dataset.

b) Click the “CollectTrain” button, select the training image(s). Fig.5-1

Draw the red line on foreground (vegetation area) by click the left button of mouse.

Draw the blue line on background by click the right button of mouse. Fig.5-2

c) After finished the selection from one image, click “Next” button. The image will be switched to next one automatically. And the training data will be saved automatically.

d) Once move to last selected image, a warning message will appear, at this moment, if user click “Next” button after finished training data acquisition on this last image, anther warning message will appear to remind user that all the training data was acquired and please press key “q” of your keyboard to quit this step. Fig.5-3.

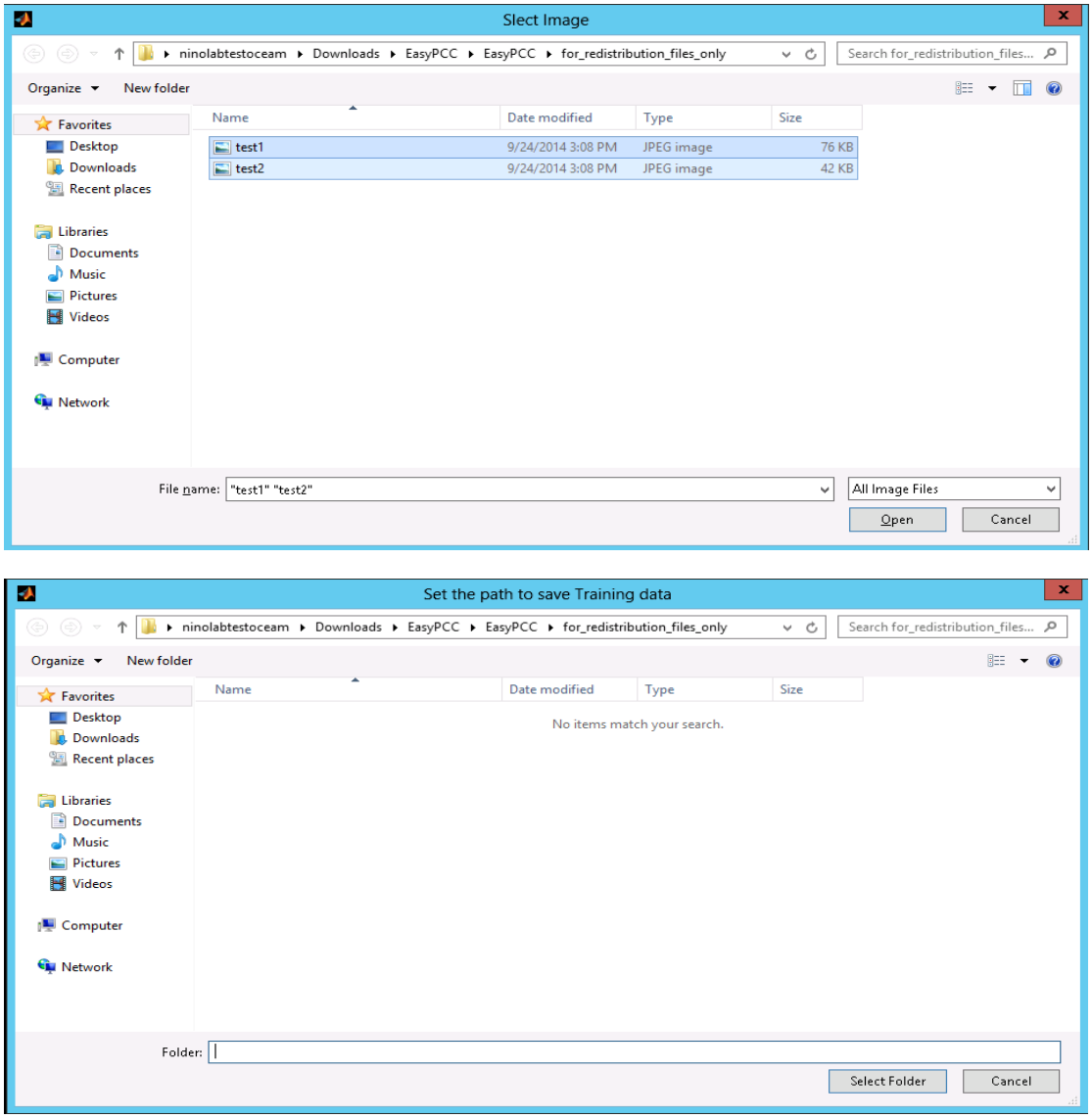


Fig.5-1. Select the images for training data acquisition and indicate the path for saving acquired training data (*.csv)

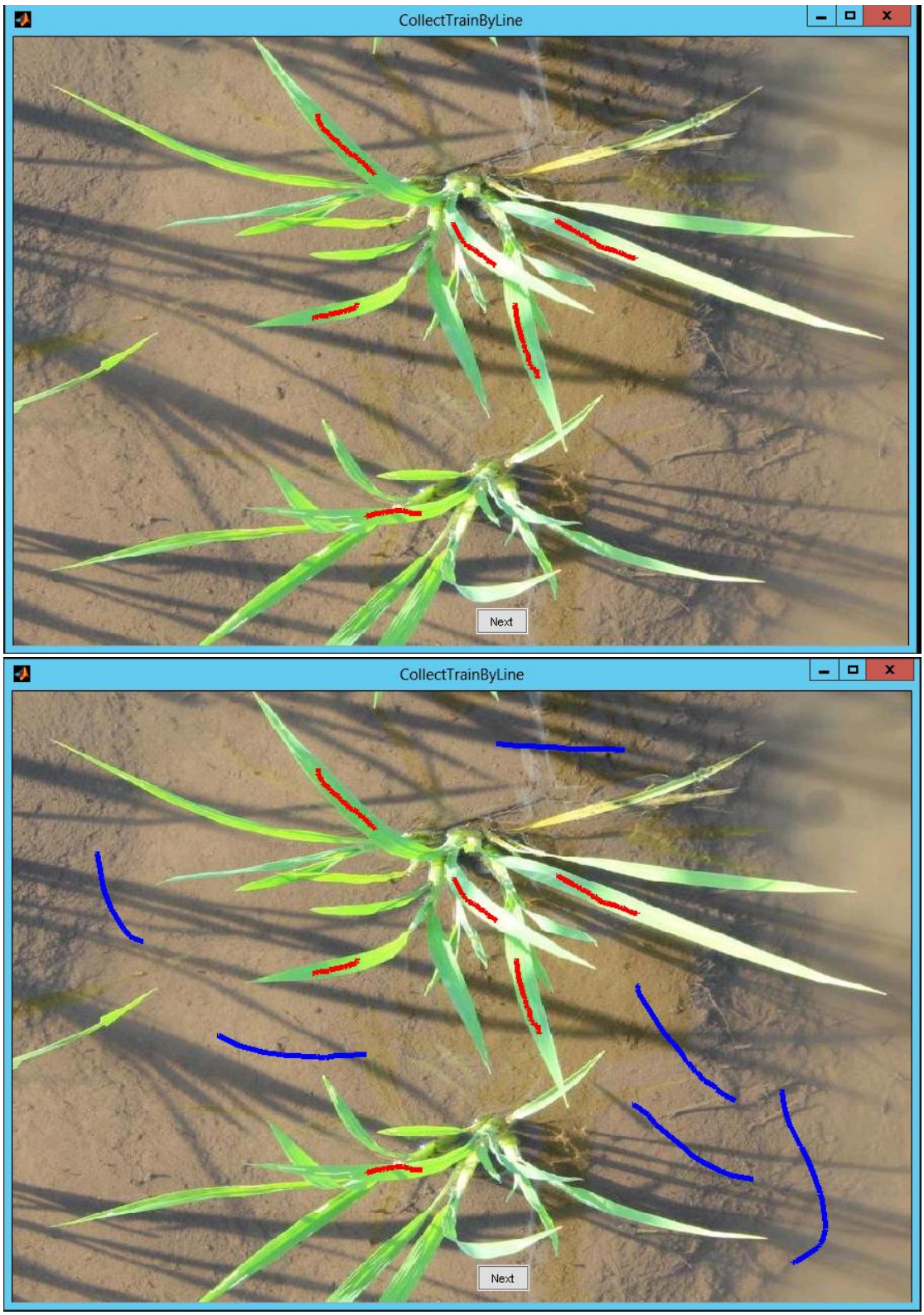


Fig.5-2. Training data acquisition by draw the line.

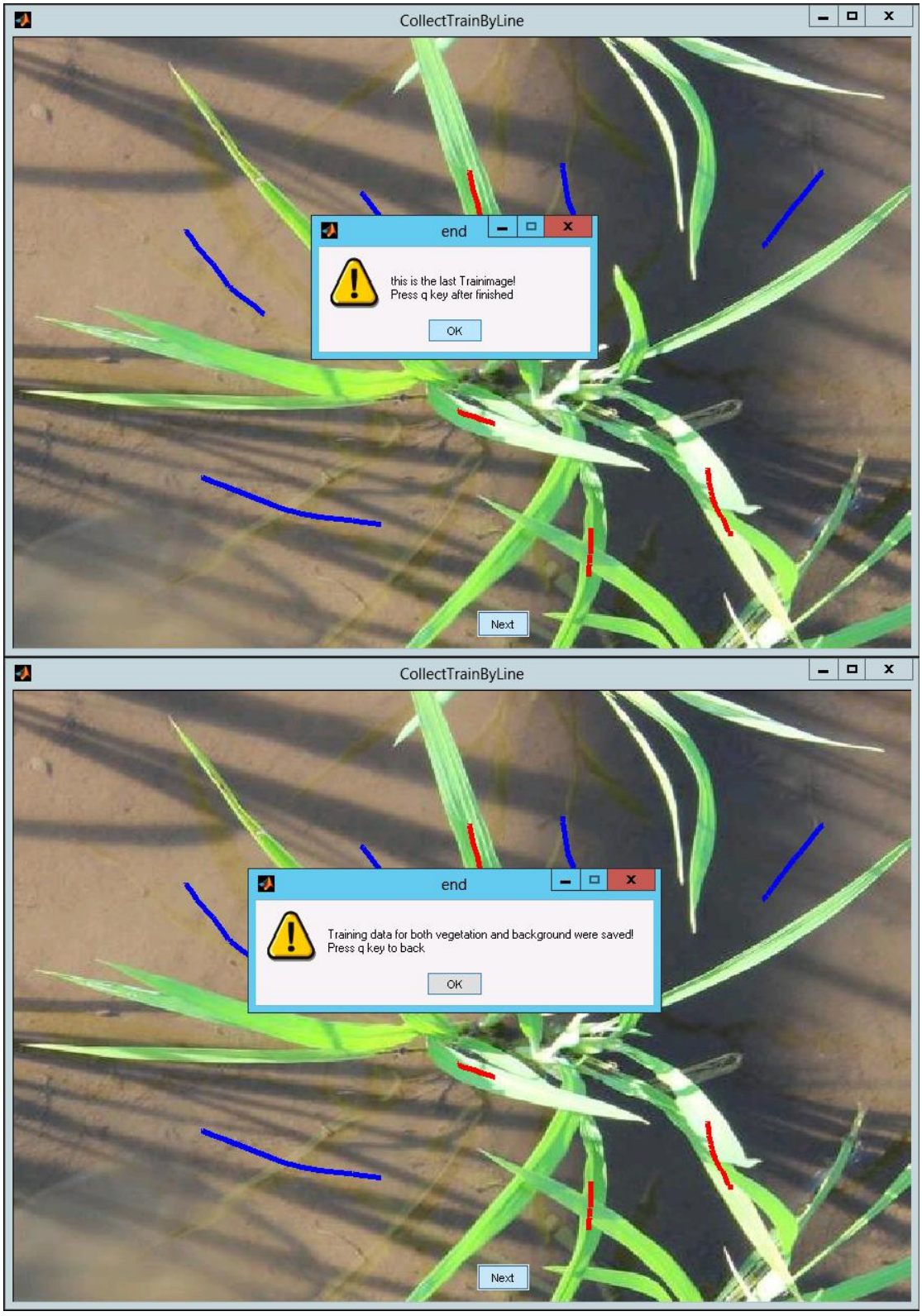


Fig.5-3 Finishing the training data acquisition.

5.2. DTSM model generation

a) Click the “Generate Model” button, choose the training data. Indicate the path for saving generated model. Fig.5-4

Note user do not need to select all the *.csv files.

b) Wait until the Finishing message coming out. Fig.5-5

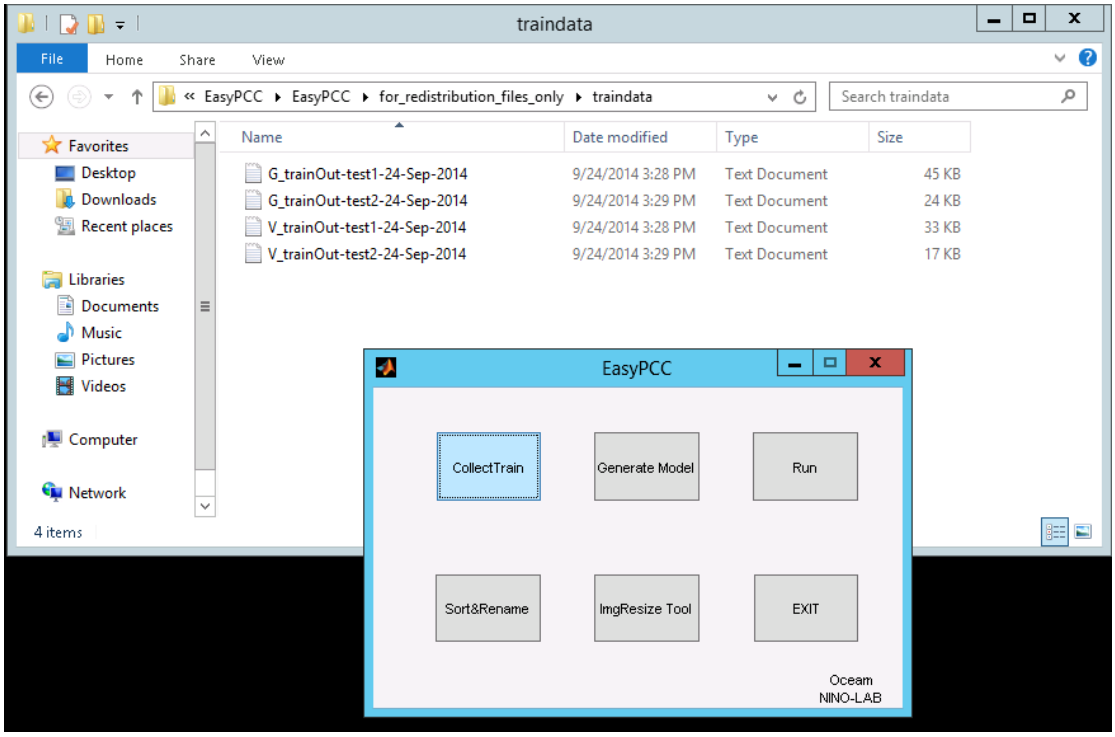


Fig.5-4. Select the training data set for DTSM model generation.

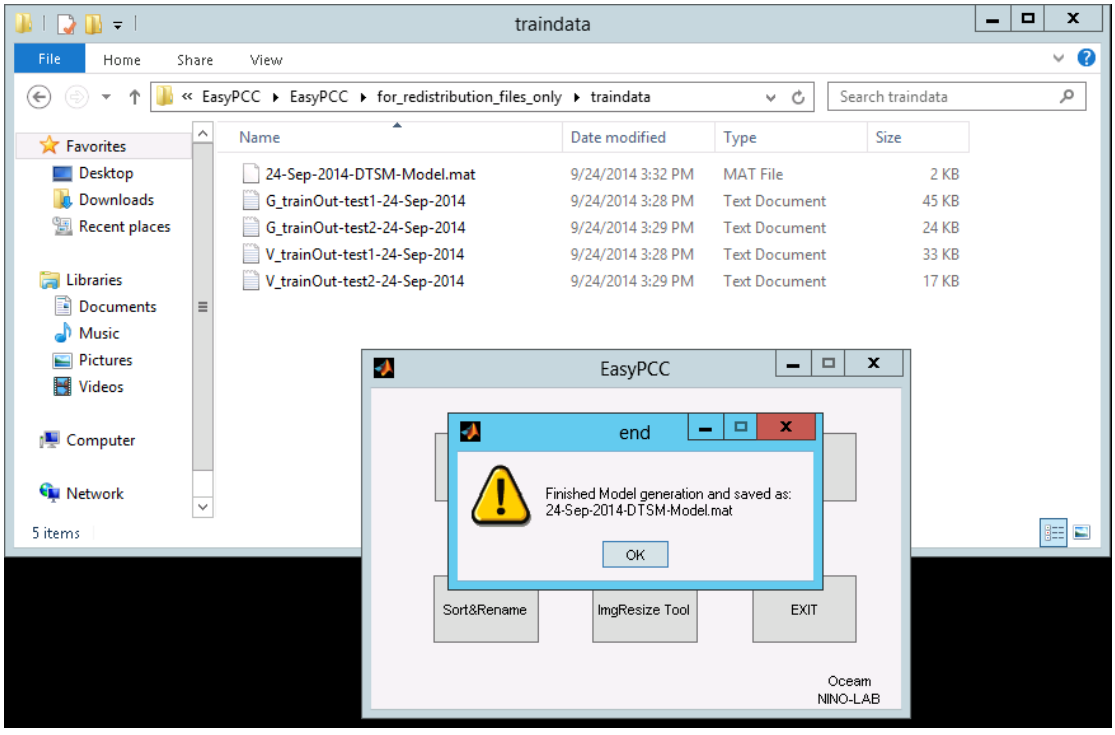


Fig.5-5. Finishing message of model generation.

5.3 Run the model to segment the model and calculate the coverage rate of vegetation area.

a) Click the “Run” button.

b) Define the filter size for noise reduction. Eg. 100 means 100by100 pixels.

c) Indicate the path for saving segmented images. (results)

d) Choose the DTSM model which were generated by user or pre-provided “Oceam-model”.

e) Coffee time ^^ just waiting for process finish.

f) After the process finished, user could confirm the results saving path from finishing warning message.

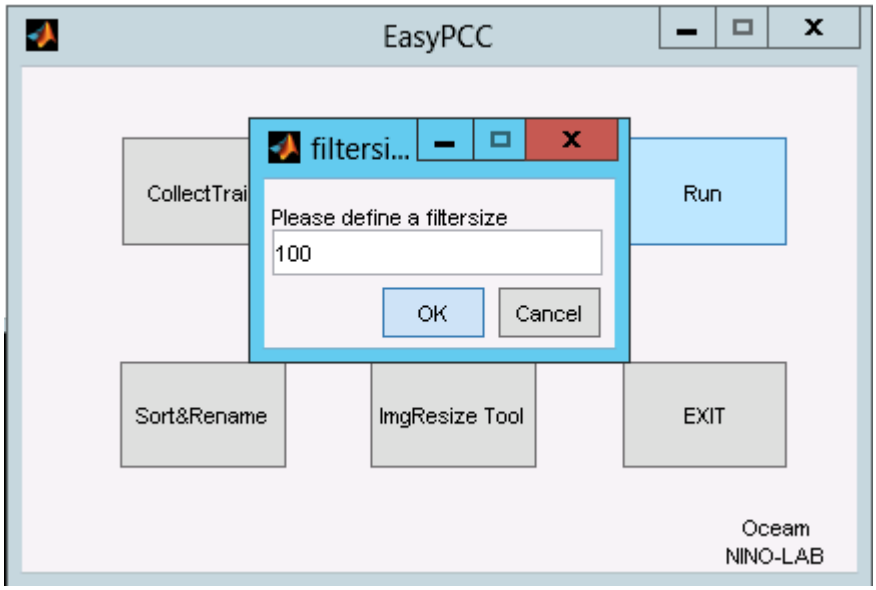


Fig.5-6. Define the filter size for noise reduction.

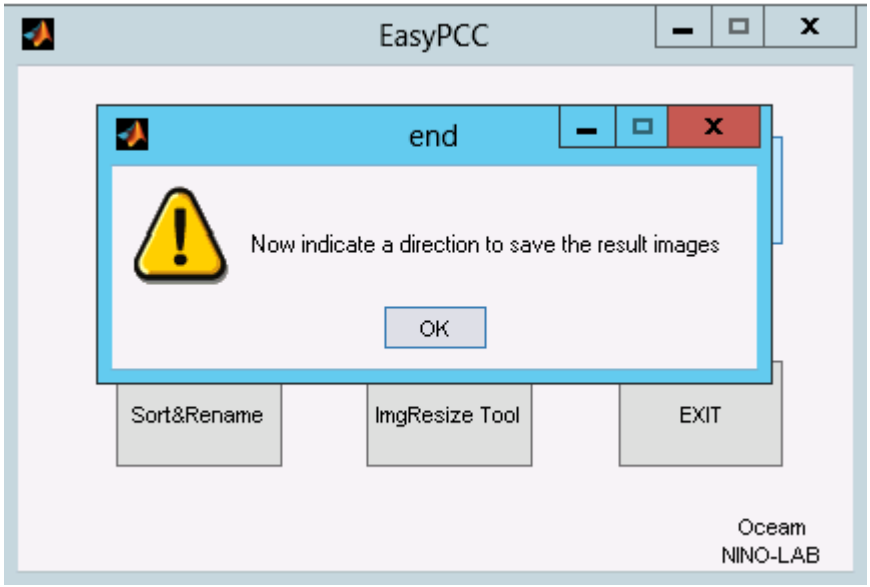


Fig.5-7. Indicate the path for saving result.

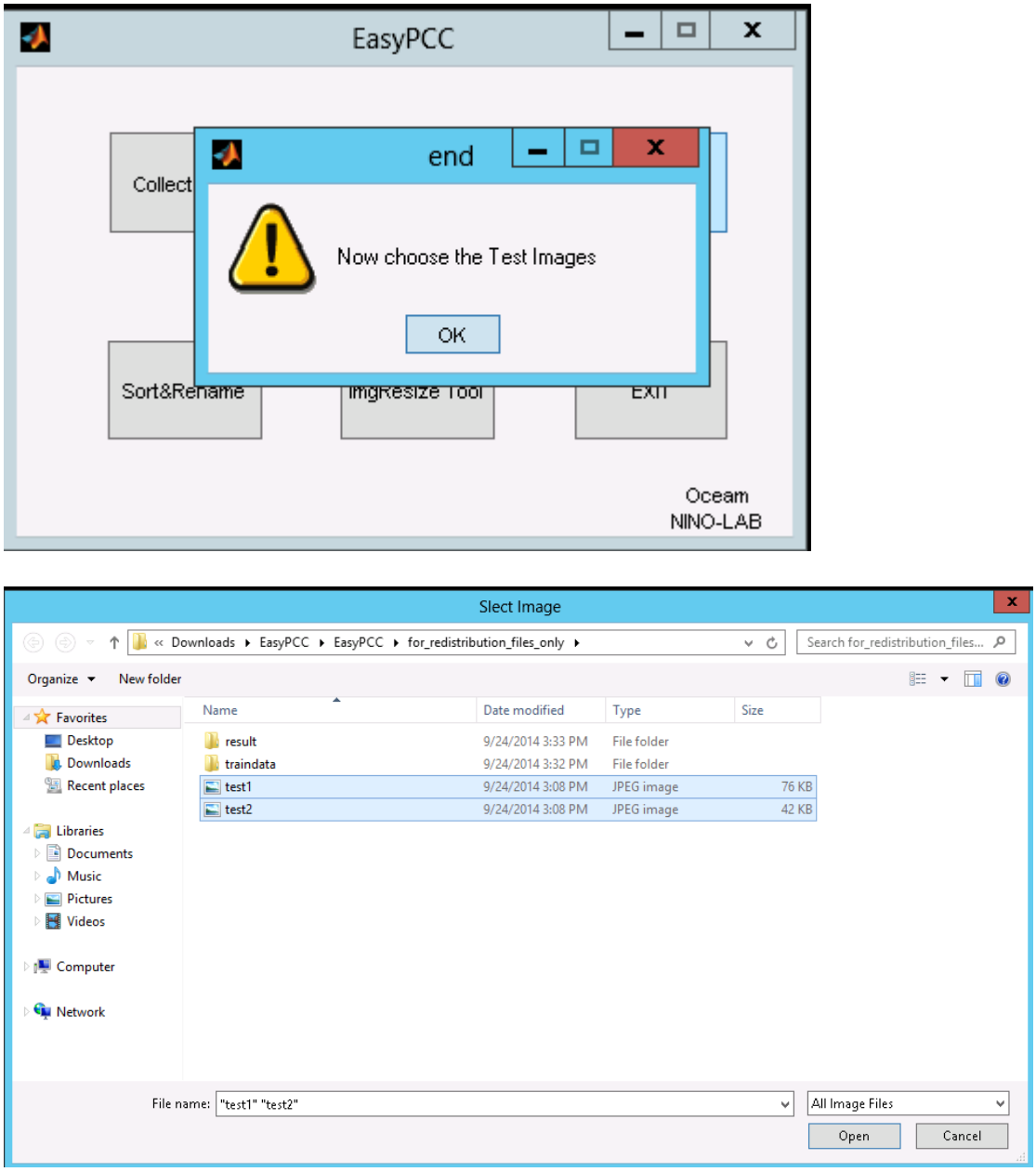


Fig.5-9. Choose the test images.

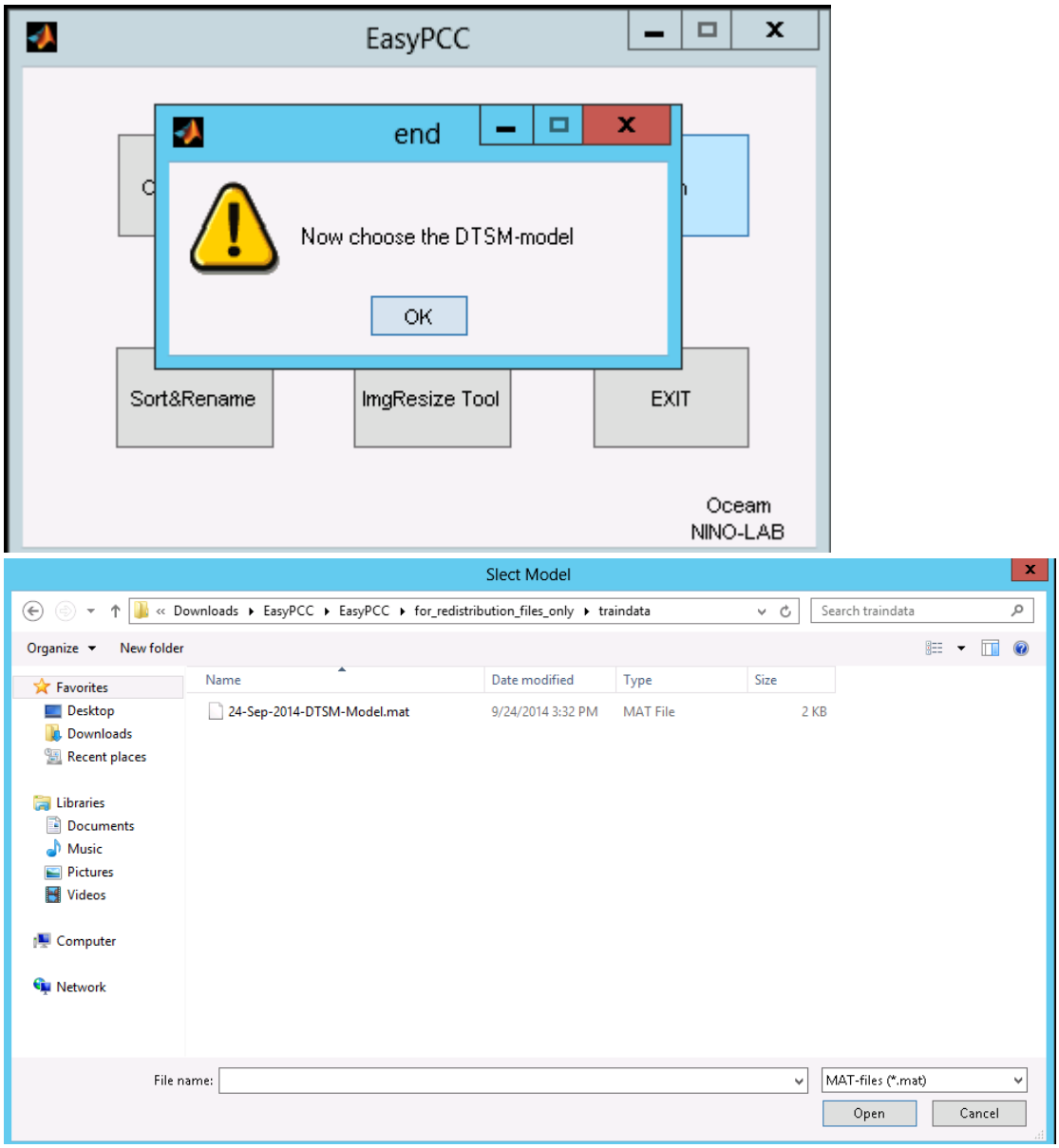
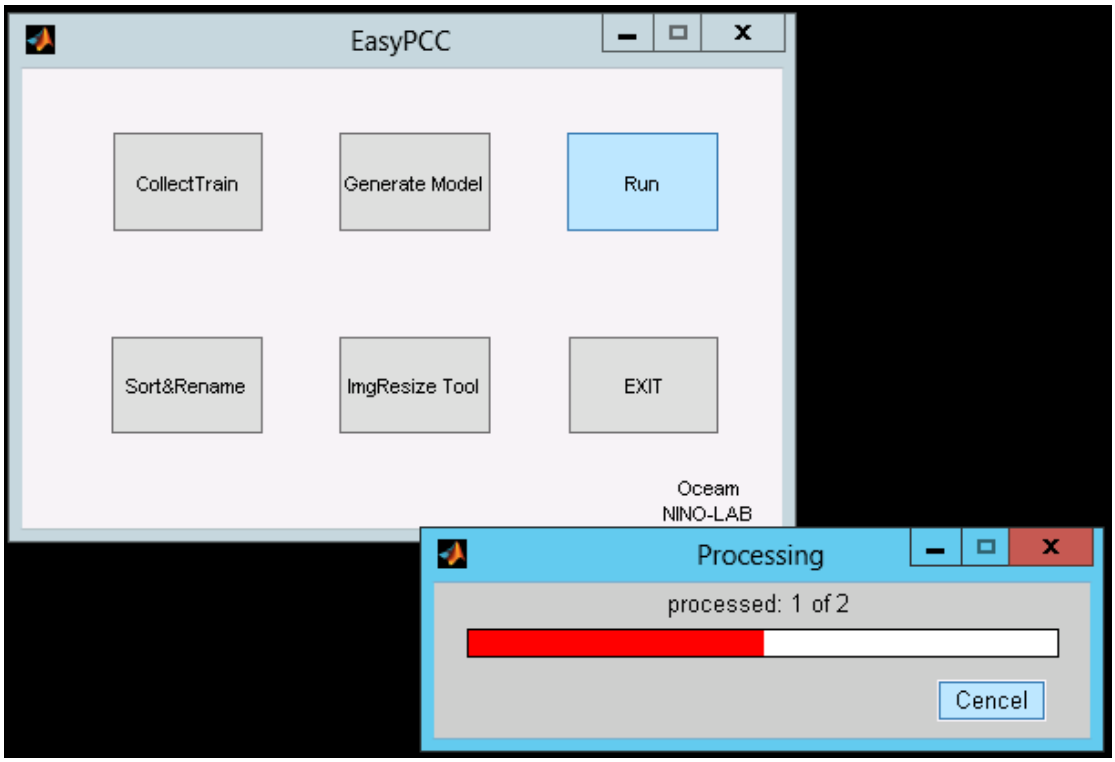


Fig.5-10.Choose the DTSM model.



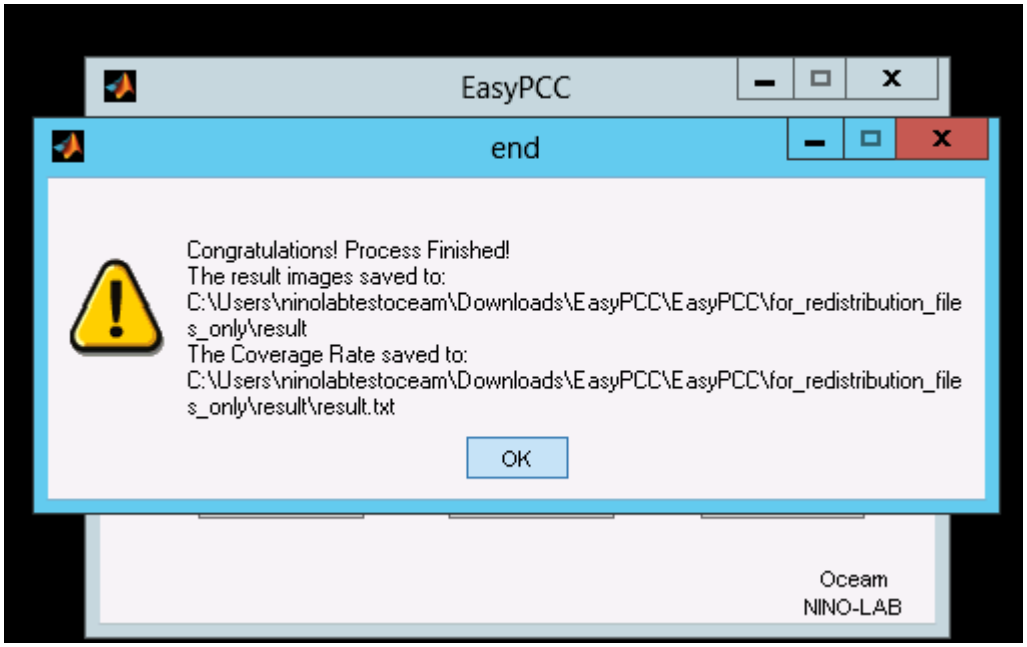


Fig.5-11 Process and Finish message.

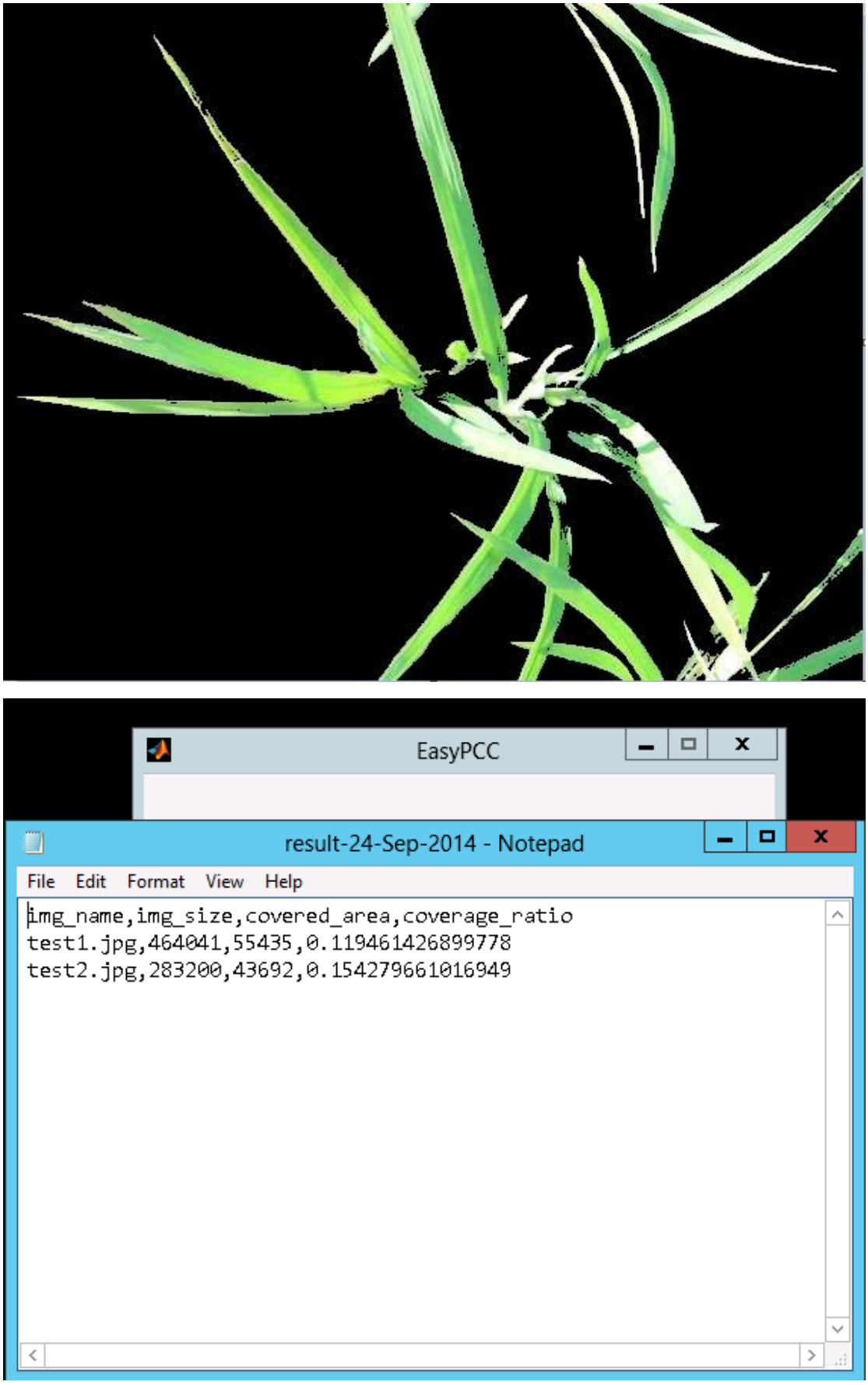


Fig.5-12. Confirm the results.