

Non-destructive Evaluation of Insect Infestation on Mango Fruit: Optimal Scan Time of X-ray Computed Tomography

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Introduction

- ✓ Non-destructive testing (NDT) technology is one of the widely used inspection methods for agricultural products.
- ✓ Herein, pest-infested *Mangifera indica* (Mango) was inspected by CT. We artificially set the pest-infested condition.
- ✓ CT images were acquired with various scan times to analyze whether it was possible to determine pest infestation.
- ✓ We investigated how short scan times can block pest-infested *Mangifera indica* in the quarantine process.

Experimental details



Fig. 1. Pest-infested *Mangifera indica*

Scan mode	Scan time
High-speed mode	3.9 seconds
	8 seconds
Standard-speed mode	18 seconds
	2 minutes
High-resolution mode	4 minutes
	14 minutes

Table 1. Scan time of CT images

Results

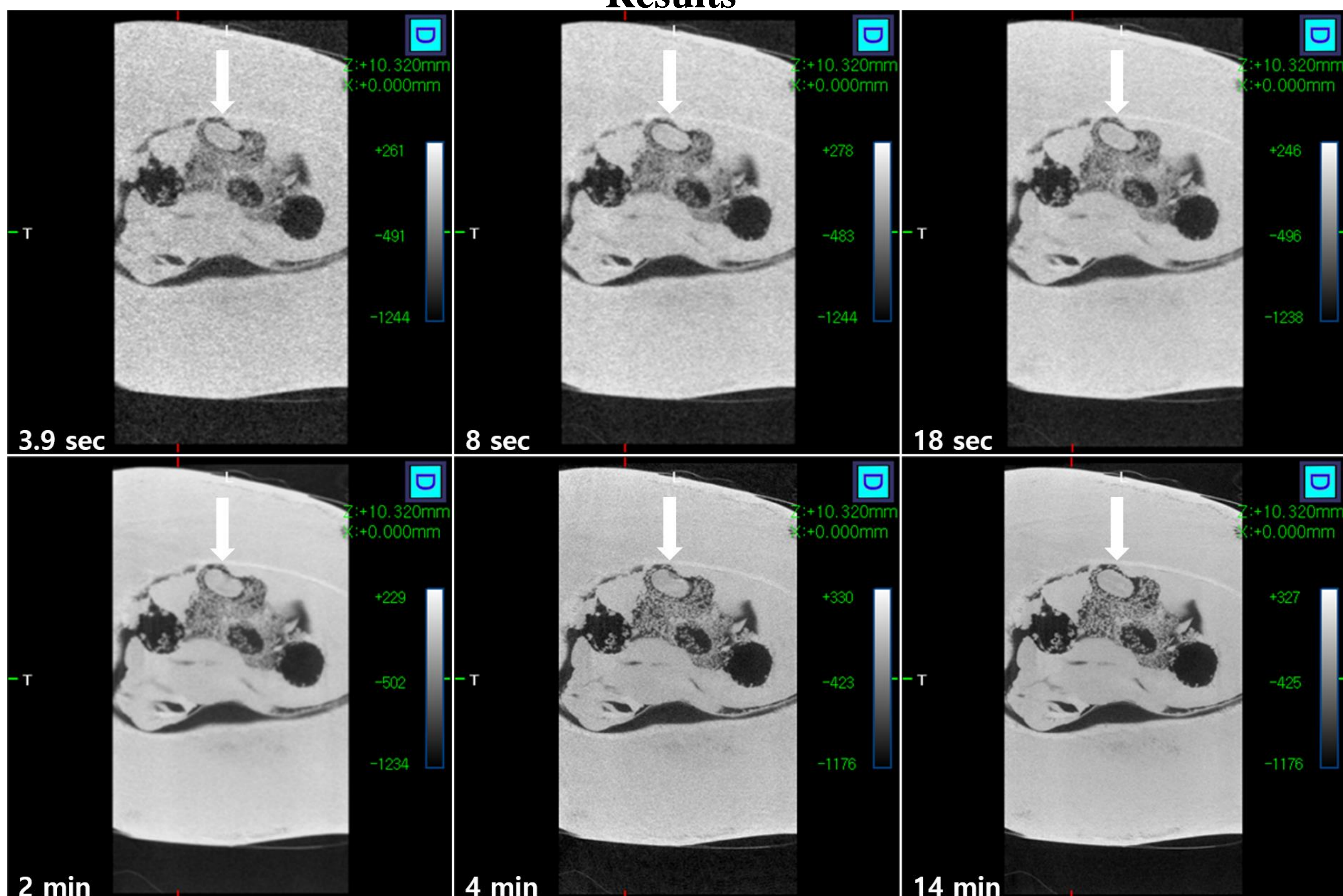


Fig. 2. *Mangifera indica* CT image with various range of scan time. The white arrow indicates a chestnut weevil.

Discussion and Conclusions

- ✓ We investigated optimal scan time of CT images to quarantine pest-infested *Mangifera indica*.
- ✓ CT images with only few-second scan time were able to identify the artificially inserted chestnut weevil. It is suitable and fast enough to be applied in the quarantine field.
- ✓ In the future, we will verify the validity of few-second CT images through additional quantitative analysis.