

[Available Issues](#) | [Japanese](#)>> [Publisher Site](#)Author: Keyword: 

Search

ADVANCED

[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1882-0484

PRINT ISSN : 0031-9473

**Japanese Journal of Phytopathology**

Vol. 73 (2007) , No. 1 pp.3-8

[\[PDF \(940K\)\]](#) [\[References\]](#)**Scratch method for simple, rapid diagnosis of citrus huanglongbing using iodine to detect high accumulation of starch in the citrus leaves**T. TAKUSHI<sup>1)</sup>, T. TOYOZATO<sup>1)</sup>, S. KAWANO<sup>1)</sup>, S. TABA<sup>2)</sup>, K. TABA<sup>1)</sup>, A. OOSHIRO<sup>1)</sup>, M. NUMAZAWA<sup>1)</sup> and M. TOKESHI<sup>1)</sup>

1) Okinawa Prefectural Agricultural Research Center

2) Faculty of Agriculture, University of the Ryukyus

(Received February 24, 2006)

(Accepted July 13, 2006)

**ABSTRACT**

We demonstrated a rapid and simple diagnostic method (scratch method) for citrus huanglongbing (HLB) by detecting high accumulation of starch in the citrus leaves with the iodine-starch reaction. The average quantity of starch was 514.2 mg/kg in HLB-infected citrus leaves and 85.6 mg/kg in healthy leaves (Welch's *t*-test  $p < 0.01$ ), a significant difference in starch levels between diseased and healthy leaves. Based on this result, we devised a scratch method using abrasive paper for HLB diagnosis. Scratch the surface of a citrus leaf at least 20 times with abrasive paper, put the abrasive paper into 1 ml water in a vinyl pack, add to about 25  $\mu$ l iodine solution 50 mM for dyeing starch. Iodine-reacted solutions show mostly 'dark brown or black' and 'yellow or orange' which are HLB-positive and negative, respectively. The scratch method and PCR assay of field samples showed more than 90% agreement. In addition, the scratch method did not give false HLB-positive reactions for healthy, nutrient-deficient or other disease leaves infected with *Citrus tatter leaf virus* and *Hop stunt viroid*. Therefore, the scratch method will be useful for rapid, simple detection of HLB in the field.

**Key words:** citrus huanglongbing, iodine-starch reaction, starch, scratch method



[\[PDF \(940K\)\]](#) [\[References\]](#)

Download Meta of Article [\[Help\]](#)

[RIS](#)

[BibTeX](#)

To cite this article:

T. TAKUSHI, T. TOYOZATO, S. KAWANO, S. TABA, K. TABA, A. OOSHIRO, M. NUMAZAWA and M. TOKESHI (2007). Scratch method for simple, rapid diagnosis of citrus huanglongbing using iodine to detect high accumulation of starch in the citrus leaves . Japanese Journal of Phytopathology 73: 3-8 .

---

doi:10.3186/jjphytopath.73.3

JOI JST.JSTAGE/jjphytopath/73.3

Copyright (c) 2007 The Phytopathological Society of Japan

---



---

[Japan Science and Technology Information Aggregator, Electronic](#)

