

## Product Information: DAS-ELISA

# Citrus tristeza virus (CTV)

### Synonym: Closterovirus tristezae

CTV (2) occurs worldwide wherever citrus is growing and is the economically most important viral disease of citrus. It has a narrow range of hosts mostly restricted to citrus species. The virus is transmitted by aphids in a semi-persistent manner. Important aphids are "the brown citrus aphid" (*Toxoptera citricida*) and "the melon aphid" (*Aphis gossypii*). There is a great diversity of symptoms; the severity depends on the virus strain and on the host (often also on the scion-rootstock combination). Symptoms include declining (e.g. on sour orange rootstocks), seedling yellows, stem pitting, loss of vigour, wilting, stunting, yellow-brown staining at bud union and on inner surface of bark, etc. up to complete die-back (e.g. of limes irrespective of rootstocks).

### Specificity and sampling instruction

Polyclonal antibodies were raised in rabbits against a CTV recombinant coat protein (6), enabling in DAS-ELISA (3) the detection of mild as well as decline, seedling yellow and stem pitting isolates from different parts of the world (broad-spectrum reagents). The concentration of CTV in tissue varies; thus, conscious sample collection is important. Bark, petioles, and midribs of tender flushes, as well as pedicels and buttons of fruits are good tissue sources. Field samples should be collected preferably in spring or autumn, whereas sampling during prolonged hot weather should be avoided. Samples from 3-4 different locations on the tree should be pooled (1,4,5). Samples are homogenized 1:20 (w/v) in extraction buffer «General» (Art. No. 110120).

The product was validated in collaboration with the laboratory of Dr. Manjunath Keremane (National Clonal Germplasm Repository for Citrus and Dates, Riverside, CA, USA).

### Information on the antibodies

Coating IgG: polyclonal; conjugate: polyclonal

### References

- (1) Bar-Joseph, M., Garnsey, S.M., Gonsalves, D., Moscovitz, M., Purcifull, D.E., Clark, M.F., and Loebenstein, G. 1979. *Phytopathology* 69:190-194.
- (2) Bar-Joseph, M., and Lee, R.F. 1989. Descriptions of plant viruses. No. 353. CMI/AAB. 7 pp.
- (3) Clark, M.F., and Adams, A. N. 1977. *J. gen. Virol.* 34:475-483.
- (4) Lee, R.F., Garnsey, S.M., Marais, L.J., Moll, J.N., and Youtsey, C.O. 1988. In L.W. Timmer, S.M. Garnsey and L. Navarro (Eds): *Proceedings 10th Conf., Intern. Org. of Citrus Virol.* Riverside, CA. pp. 33-38.
- (5) Rocha-Peña, M.A., and Lee, R.F. 1991. *J. of Virol. Methods* 34:311-331.
- (6) Iracheta-Cárdenas M., Sandoval-Alejos B.D., Román-Calderón M.E., Manjunath K.L., Lee R.F. and Rocha-Peña M.A., 2008. Production of Polyclonal Antibodies to the Recombinant Coat Protein of Citrus tristeza virus and their Effectiveness for Virus Detection. *Journal of Phytopathology* 156: 243-250.

### Ordering Information

**BIOREBA offers the following formats:**

**Individual ELISA reagents** for 100, 500 or 1000 assays: IgG and/or conjugate for the working volume of 200 µl/test/well.

**Reagent sets** for 480 or 960 assays: IgG and conjugate, positive and negative controls, and microtiter plates (F-96) for a working volume of 200 µl/test/well.

**Complete kits** for 96, 480 or 960 assays: All reagents, controls, microtiter plates (F-96), buffers, and substrate necessary for a working volume of 200 µl/test/well.

ELISA buffers, equipment for sample preparation and disposables are also available.

For all Art. No. please refer to our product catalogue or our homepage [www.bioreba.com](http://www.bioreba.com) and for prices and further information on any other product from BIOREBA, please contact your local distributor or our office in Switzerland.

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Version: 6 - 09.05.2025

Adaptations from last version: added revised taxonomy of ICTV and assays of individual ELISA reagents.