



ImmunoStrip® Validation Report

On-site Plant Pathogen Testing

Angelonia flower break virus (AnFBV)

ISK/STX 36600

ImmunoStrip®

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Test Characteristics

Test Name	Angelonia flower break virus	Capture Antibody	Polyclonal (Rabbit)
Catalog Number	36600	Detection Antibody	Polyclonal (Rabbit)
Acronym	AnFBV	Format	Lateral Flow Device
Genus	Alphacarmovirus	Diluents	SEB1
		Sample Dilution	1:20

Summary

The Angelonia flower break virus (AnFBV) ImmunoStrip is used to detect the presence of AnFBV in ornamental crops. AnFBV is a member of the Alphacarmovirus genus known for their non-enveloped, spherical, icosahedral-shaped virus particles. ImmunoStrips are the perfect screening tool for use in the field, greenhouse, and the lab.

Diagnostic Sensitivity

True Positives	96
Correct Diagnoses	96
Percent	100%

Analytical Sensitivity

Limit of Detection: 1:300,000 dilution of infected tissue (pathogen titer unknown)

Analytical Specificity

Inclusivity:

Isolates and Geographic Regions Detected:

AnFBV CA, USA isolate	AnFBV Israel isolate
AnFBV PV-0858 (Germany)	AnFBV USA isolate

Exclusivity:

Cross-reacts With:

None Known	
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Does Not Cross-react With:

Alfalfa mosaic virus (AMV)	Alternanthera mosaic virus (AltMV)
Arabis mosaic virus (ArMV)	Broad bean wilt virus 1 (BBWV-1)
Broad bean wilt virus 2 (BBWV-2)	Calibrachoa mottle virus (CbMV)
Carnation mottle virus (CarMV)	Cucumber mosaic virus (CMV)
Groundnut ringspot virus (GRSV)	Impatiens necrotic spot virus (INSV)
Nemesia ring necrosis virus (NeRNV)	Papaya mosaic virus (PapMV)
Pelargonium flower break virus (PFBV)	Plantago asiatica mosaic virus (PIAMV)
Prunus necrotic ringspot virus (PNRSV)	Ribgrass mosaic virus (RMV)
Tobacco mosaic virus (TMV)	Tobacco rattle virus (TRV)
Tobacco ringspot virus (TRSV)	Tobacco streak virus (TSV)
Tomato aspermy virus (TAV)	Tomato chlorotic spot virus (TCSV)
Tomato mosaic virus (ToMV)	Tomato ringspot virus (ToRSV)
Tomato spotted wilt virus (TSWV)	

Diagnostic Specificity

True Negatives 187
Correct Diagnoses 187
Percent 100%

Selectivity:

No Matrix Effect Observed With:			
Angelonia leaves	Angelonia petioles	Bacopa leaves	Bacopa petioles
Begonia leaves	Brachycome leaves	Calibrachoa leaves	Calibrachoa petioles
Cathranthus leaves	Coleus leaves	Coreopsis leaves	Crassula leaves
Dahlia leaves	Dianthus leaves	Euphorbia leaves	Gaura leaves
Herdera leaves	Hypoestes leaves	Impatiens leaves	James brittania leaves
Laminium leaves	Lantana leaves	Lavandula leaves	Nemesia leaves
Nemesia petioles	Osteospermum leaves	Petunia leaves	Petunia petioles
Phlox leaves	Phlox petioles	Plectranthis leaves	Portula leaves
Rudbeckia leaves	Salvia leaves	Sutera leaves	Verbena leaves
Verbena petioles			

Repeatability

Number of Samples 283
Replicates per Sample 2 - 6
Average Percent Agreement 99.9%
Between Replicates

Reproducibility

Number of Samples 21
Replicates per Sample 3
Number of Operators 2
Average Percent Agreement Between 99.2%
Replicates Between Operators

Robustness

Planned deviation analysis:

No deviations from the user guide protocol were validated.

Stability:

	1-year stability (accelerated)	Real-time Stability Verification
Positive Sample (High)	Pass	Monitoring
Positive Sample (High)	Pass	Monitoring
Positive Sample (Low)	Pass	Monitoring
Positive Sample (Low)	Pass	Monitoring
Positive Sample (Low)	Pass	Monitoring
Negative Sample	Pass	Monitoring
Negative Sample	Pass	Monitoring
Negative Sample	Pass	Monitoring

Glossary

Diagnostic sensitivity¹:	The percentage of positive samples correctly identified in an experiment with known positive controls.
Diagnostic specificity¹:	The percentage of negative samples correctly identified in an experiment with known negative controls.
Analytical sensitivity²:	The smallest amount of target that can be detected reliably (this is sometimes referred to as the 'limit of detection')
Analytical specificity²:	(comprises inclusivity and exclusivity)
Inclusivity³:	The performance of a test with a range of target isolates covering genetic diversity, different geographical origin and/or hosts associated with the target organism.
Exclusivity³:	The performance of a test with a range of non-targets (e.g. cross-reaction with closely related organisms, contaminants)
Selectivity²:	The level of effect that matrices and relevant plant parts have on the performance of the assay.
Repeatability²:	The agreement between test replicates of the same sample tested by the same operator.
Reproducibility³:	The ability of a test to provide consistent results when applied to aliquots of the same sample tested under different conditions (e.g. time, users, equipment, location)
Robustness^{1,3}:	The extent to which varying test conditions (e.g. temperature, volume, change of buffers) affect the established test performance values. May also be referred to as planned deviation analysis.
Stability¹:	The performance of test reagents or controls over time.

References:

¹Groth-Helms, D., Rivera, Y., Martin, F. N., Arif, M., Sharma, P., Castlebury, L. A. (in press). Terminology and Guidelines for Diagnostic Assay Development and Validation: Best Practices for Molecular Tests. *PhytoFrontiers*.

²Eads, A., Groth-Helms, D., Davenport, B., Cha, X., Li, R., Walsh, C., Schuetz, K., (in press). The Commercial Validation of Three Tomato Brown Rugose Fruit Virus Assays. *PhytoFrontiers*.

³EPPO (2018) PM 7/76 (5) Use of EPPO Diagnostic Standards, EPPO Bulletin 48, 373– 377.