



## Intended Use:

AmplifyRP XRT for *Cmn* is a rapid DNA amplification and detection platform designed for testing corn crops for *Clavibacter michiganensis* subsp. *nebraskensis*. This kit includes lyophilized reaction pellets containing the necessary reagents to amplify *Cmn* DNA and an exogenous DNA control at a single operating temperature (39 °C).

**SPECIFICITY:** Detects only *Cmn*. Does not cross-react with other *Clavibacter* species.  
**SENSITIVITY:** Approximately 500 CFU/ mL  
**PROBE LABEL:** FAM (Agdia has optimized this kit for use with the AmpliFire® manufactured by Agdia, Inc. Contact us for information on use with other instruments.)

## Kit Storage:

All kit components should be stored refrigerated (2 - 8 °C).

Before use, allow all kit components to warm to room temperature (18 - 30 °C) for 20 to 30 minutes.

## Contents of Kit:

- Reaction pellets
- 100 µL Pellet Diluent Tubes
- AMP1 extraction buffer
- Sample extraction bags, mesh

## Not Included but Required:

- AmpliFire Isothermal Fluorometer [AFR 60400](#) (or equivalent)
- Pipettes (5 µL & 25 µL)
- 1x PBS (bacterial culture testing only)

*NOTE: AmplifyRP is a very sensitive molecular assay. Do not re-use disposable kit components. It is recommended that latex gloves be worn when taking samples and performing assay. If wearing latex gloves, change them between samples and test runs. Sanitize work area and non-disposable equipment between runs with bleach solution that has a concentration of at least 600 ppm (1:10 of household bleach solution).*

**Prior to setting up reactions, turn on the AmpliFire (or an alternative isothermal instrument) so that it is ready to accept reactions. It should be pre-heated to the recommended 39 °C before inserting reactions and setup to run on the FAM and CalRed channels.**

## Sample Preparation - Plant Tissue (Skip to Page 2 for testing bacterial culture)

**1.** *Cmn* bacteria is most often not evenly distributed throughout an infected plant's vascular system. Therefore Agdia recommends to test [symptomatic](#) leaf or stalk tissue when possible. Collect 0.1 g of tissue from the suspect area.

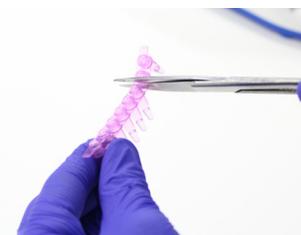
**2.** Place the tissue inside the provided mesh extraction bag. Add 1.5 mL of AMP1 extraction buffer. This should result in a 1:15 (w/v) extraction ratio of plant tissue. Extract the tissue by thoroughly macerating it with a blunt object such as a pen.



**3.** Remove one colored PD1 filled tube for each sample being tested. Individual tubes may be cut from the strip of tubes using scissors. Be sure to label the caps with your sample identity. **Inspect the tube to ensure all liquid is at the bottom before use.**

**4.** Transfer 5 µL of sample extract into the tube containing PD1 diluent and **mix well.**

**Your samples are now ready to be tested. Proceed to the Test Protocol on Page 3.**



### ALTERNATIVE EXTRACTION (COMPONENTS NOT INCLUDED)

If preferred, 0.1 g of tissue may alternatively be placed inside a 2.0 mL microcentrifuge tube (sold separately). The tissue can be extracted inside the tube by grinding it with a pestle or golf tee, adding 1.5 mL of AMP1 extraction buffer, and mixing until the resulting solution is green/brown in color.



Click here to  
 access your  
 lot specific  
 QR code

## Sample Preparation - Bacterial Culture (Skip if testing plant tissue)

**NOTE: DO NOT USE CULTURES STRAIGHT FROM YDC MEDIA OR OVERGROWN CULTURES FROM OTHER MEDIA THAT PRODUCE EXTREMELY WET AND RUNNY COLONIES. CULTURES GROWN ON YDC MEDIA ARE KNOWN TO INHIBIT THE ASSAY. NBY, sCNS, or TSA IS THE PREFERRED MEDIA FOR USE WITH THIS ASSAY.**

- 1.** Dispense 500  $\mu$ L of 1X PBS into a 1.5 mL microcentrifuge tube (sold separately).

Suspend a loopful/colony in the 1X PBS from freshly grown culture (**SEE NOTE ABOVE REGARDING MEDIA**).

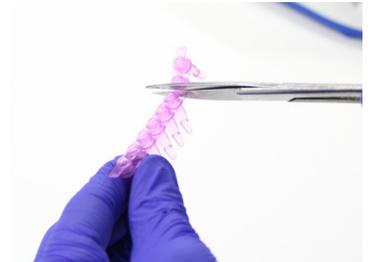
If testing a dilution series of culture, make the serial dilutions in sterile water. If you wish to plate the dilutions, do so before proceeding to the next steps.



- 2.** Add an equal volume of AMP1 extraction buffer to the undiluted culture suspension and mix by pipetting. (example: 500  $\mu$ L suspension: 500  $\mu$ L AMP1 buffer).



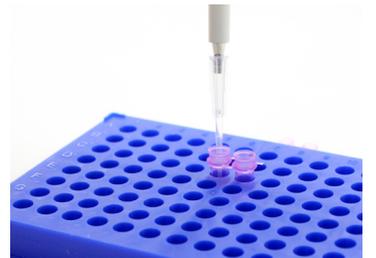
- 3.** Remove one colored PD1 filled tube for each sample being tested. Individual tubes may be cut from the strip of tubes using scissors. Be sure to label the caps with your sample identity. **Inspect the tube to ensure all liquid is at the bottom before use.**



- 4.** Transfer 5  $\mu$ L of sample extract into the tube containing PD1 diluent and **mix well**.

**Your samples are now ready to be tested. Proceed to the Test Protocol on Page 3.**

If you are testing the sensitivity of the RPA assay, serially dilute the AMP1 extracted sample within the PD1 strip by transferring 10  $\mu$ L to subsequent tubes.



# Test Protocol for Real-Time Detection In AmpliFire®

**1.** Press the “Execute Reaction” button on the AmpliFire®. Then press “Scan Product Code”.



**2.** Scan the barcode found by following the hyperlink on page 1. The barcode scanner is located on the left side of the AmpliFire.

Note: Scanning works best when the barcode is held 3 - 4 inches from the scanner in an area with sufficient ambient light.

Once the AmpliFire has accepted the scan and displayed run method, click “Next”.



**3.** Follow on-screen prompts to name your reaction and individual sample IDs.

Sample IDs for individual wells are optional. If you prefer to use the default values, click “FINISH”.

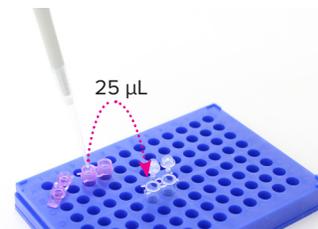


**4.** Remove a canister of reaction pellets from the white foil pouch labeled with the barcode. Then remove a strip of reaction pellets from the desiccated container. While securing the strip of pellets in a 200 µL PCR tube rack, cut the number of reaction pellets from the strip that are intended for use.



**Reaction Pellets are light sensitive. Immediately place remaining reaction pellets back into the desiccated tube and then insert the desiccant tube into the foil pouch to protect from light.**

**5.** Transfer 25 µL from the colored tube containing your sample extract into the reaction pellet (clear tube).



Tightly recap the reaction tube. Mix well and centrifuge. If you cannot vortex the reaction, mix by gently flicking the side of the tube. If you do not have a centrifuge available, you may manually shake the liquid to the bottom of the reaction tube.

**IMPORTANT: DO NOT TRANSFER MORE THAN THE PRESCRIBED 25 µL DURING THIS STEP! IMMEDIATELY PROCEED TO THE NEXT STEP ONCE THE REACTION HAS BEEN REHYDRATED.**

**6.** Press “Start” on the AmpliFire. Immediately follow the prompts to add your reactions, press “OK”, and put the lid down.

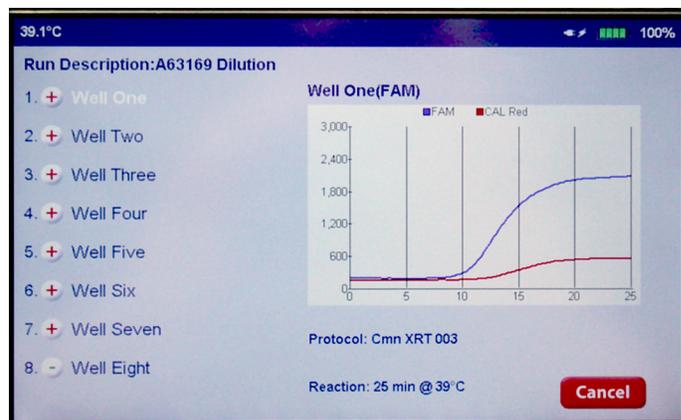


**7.** After 25 minutes of total run time the instrument will beep, indicating the test is complete. The test results will be visible next to the well designation on the screen, and should be interpreted as follows:

Blue curve = FAM = *Cmn*      Red curve = CalRed = Internal control

(+) = Positive for *Cmn*   (-) = *Cmn* not detected   (!) = Invalid

The internal control is an exogenous reaction and occupies the CalRed channel. An invalid result indicates that the internal control did not amplify as expected (see Limitations on page 4).



## Limitations

The following is a description of factors that could limit test performance or interfere with proper test results.

**Reaction Volume:** Care should be taken to ensure the volume used to rehydrate the reaction is within +/- 10 % of the prescribed 25 µL mentioned in step 5 of the Test Protocol. Deviating outside this tolerance may result in test failure.

**Inhibition:** Root tissues may inhibit the test; we recommend testing stem and leaf tissues.

**Addition of sample extract to reaction pellet:** It is important to add only the prescribed amount of sample extract to the pellet diluent tubes. Adding too much extract may cause test failure.

**Invalid Results:** An invalid result indicates that the internal control did not amplify as expected. This phenomenon is usually caused by the sample being too concentrated leading to inhibition of the reaction or from adding too much or too little extract diluted in PD1 to the reaction pellet (See step 5 of the Test Protocol). Always use care to extract the sample at the recommended sample dilution and follow the prescribed dispense volumes in this procedure.

**Storage:** Test results may be weak or the test may fail if the storage instructions are not followed properly. The lyophilized test components must be sealed with desiccant when not in use to prevent moisture degradation, which may affect test results. Do not store pellets at temperatures greater than 42 °C, even for short periods of time, as this may cause test failure.

### Questions or Technical Support:

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E-mail: [info@agdia.com](mailto:info@agdia.com) for sales and general product information  
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AmplifyRP Test Kits employ recombinase polymerase amplification (RPA) technology, developed by TwistDx Limited, U.K. Use of the RPA process and probe technologies are protected by US patents 7,270,981 B2, 7,399,590 B2, 7,435,561 B2, 7,485,428 B2 and foreign equivalents in addition to pending patents.

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