



FireWall and FireLine in Resistance Prevention/Management Programs Against Fire Blight in Apples and Pears – Technical Bulletin 6

For decades, fire blight (*Erwinia amylovora*) in apples and pears has been effectively controlled with streptomycin-based products, especially FireWall. Unfortunately, the outstanding efficacy of this material against fire blight has led, in some cases, to an over-reliance and, as a result, in many orchards fire blight bacteria have developed varying levels of *resistance*. In orchards where fire blight bacteria are still *sensitive*, pomologists strongly recommend implementation of well-designed resistance prevention/management programs to avoid or arrest the development of resistance.

But not all orchards are the same – some orchards have no known strep-resistance, while other orchards may be dominated by it; in between are orchards with varying degrees of resistance. On top of this, growers may have no clear idea as to the actual strep-sensitivity or resistance in their orchard(s). To meet this challenge and develop effective resistance prevention or management programs requires a tailored approach – one size does not fit all.

Fundamental to the success of any resistance management program will be the employment of at

least two effective control agents – each having a different mode of action (MoA). In other words, each product attacks the pathogen simultaneously but in a different way. Thus, the bacteria will be inhibited from adapting and developing resistance to any one of the products used. **CRITICAL POINT:** when combining two products for this purpose full rates of each must be used. The idea that two half-rates is as good as one full rate does is ill-advised because half-rates may deliver sub-lethal doses to the fire blight bacteria, thereby risking resistance development to both products.



FireWall (streptomycin sulfate) and **FireLine** (oxytetracycline hydrochloride) from AgroSource are proven fire blight control products, each having a differing MoA. As such, FireWall and FireLine meet the essential criteria for a successful resistance management program against fire blight (see FRAC codes on respective product labels). The table below provides an outline how FireWall and FireLine are used in a resistance prevention or management program for fire blight control in apple and pear orchards.

Strep-Resistance Status	Resistance Prevention and Management Program ¹	Rationale
Strep-sensitive, no resistance	FireWall/FireLine <u>rotation</u>, (alternate sprays), <u>full rates each product</u>	Alternating MoAs lower selection pressure for resistance
Some loss of strep-sensitivity, but not predominate	FireWall + FireLine <u>tank mix</u>, <u>full rates each product</u>	Dual MoAs inhibit resistance development
Past economic strep-resistance but current increasing strep-sensitivity	FireWall + FireLine <u>tank mix, full rates each product but only once per season</u>; all other applications FireLine.	Tank mix manages and checks resistance; FireLine alone manages remaining fire blight
Economic strep-resistance predominates	<u>FireLine only, full rate</u> – do <u>not</u> use FireWall. Tank mix/rotate FireLine with other product having differencing MoA.	FireLine to control strep-resistant fire blight since differing MoA from FireWall

¹ AgroSource highly recommends using and following interactive software tools for fire blight forecasting such as Enviro-weather, Decision Aid System (DAS) Cougarblight, or Maryblyt 7 to determine exactly when to apply these products in your orchard. AgroSource recommends you consult with your professional pest control advisor/consultant or area extension agent regarding these matters. Always read and follow label instructions. For more information and access to other Technical Bulletins, visit the AgroSource website at www.agrosourcenet.com.