

EFFECT OF RETAIN<sup>®</sup> ON REDUCING PISTILLATE FLOWER ABORTION (PFA) IN SERR WALNUT USING SPEED SPRAYER APPLICATION

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Pistillate flower abortion (PFA) in walnut is the loss of female flowers early in the season, typically 2 to 3 weeks after bloom. It was first noted in the Serr cultivar soon after the earliest plantings came into production in the early 1970's. Serr is an important early maturing, high edible yield variety, which helps extend the harvest period and set marketing conditions. PFA can reduce dry, in-shell walnut yield 75%. In the 1980's, field-based research by Catlin et al., confirmed from detailed tagging of flowers that PFA is always associated with high numbers of pollen grains present on the receptors (stigmas) of female flowers. Research by Polito showed that the large number of resulting pollen tubes growing down the style of the female flower produced excessive ethylene and that this is most likely the cause of flower abortion. Polito also field tested non-commercial compounds which either promoted or inhibited ethylene production and observed corresponding increases and reductions in PFA. Single shoot testing in 2003 by the author of Retain<sup>®</sup>, a commercially available ethylene biosynthesis inhibitor, resulted in a four-fold increase in fruit set. In 2004, commercial speed sprayer applications at 62.5 and 125 ppm in two locations using a Latin square experimental design and four, six-tree replications resulted in a 23% to 84% increase in fruit set, depending upon the amount of PFA in the control. Differences in percent set between pre-receptive and receptive flowers were less with the higher Retain<sup>®</sup> rate. Application at 40% bloom also appeared more effective than at 70%.