Does Nitrogen Affect Color in Red Sports?

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It has long been known that sufficient red color cannot be obtained on our standard apple varieties when high nitrogen fertilization is the practice. This is especially true under Eastern conditions where climatic factors are not so conducive to the formation of red color as they are in the Pacific Northwest. The fact that nitrogen applications have to be lower in Eastern orchards may be one contributing factor to our lower per acre production.

With the increased use of color sports the question of the effect of high nitrogen applications arose. In order to obtain evidence on this subject an experiment was set up in the fall of 1945, using 9-year old Gallia Beauty trees just coming into commercial production. Treatments consisted of 1½, 3 and 6 pounds of ammonium nitrate per tree, applied in the spring or fall. Thirty-eight trees were used in each treatment and these were randomized throughout the block.

Average per cent red color of fruit was determined from these plots for the years 1947 to 1950 inclusive, as was average number of fruits per bushel for 1948 to 1950 inclusive.

The figures for per cent color would seem to indicate that there had been a slight reduction in color development in the fertilized plots. This reduction, however, is so small that it is not felt that it would be commercially significant. Our data agrees with the unpublished data of A. Lee Schraeder, of the University of Maryland, who found that color development in Starking was not seriously affected by high nitrogen fertilization. It also agrees with our own observation at the Plant Industry Station where many red sports of Stayman, Winesap, Delicious and Rome Beauty have been grown for several years without noticeably affecting color development when the nitrogen was maintained at such a level that color development on the standard varieties was seriously retarded.

The yield figures do not show a significant effect of the fertilizer treatment. This may be due to the fact that this orchard has had some frost damage every year. There is shown a tendency toward increase in size of fruit as nitrogen applications are increased. There was no apparent effect of nitrogen on the quality of color.