Discovery and Commercialization of 1-MCP as an Ethylene Inhibitor

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I often get asked if there was a moment of discovery when sirens and bells went off and we yelled "Eureka!" The answer is "not really." However, I do think that the story of this new treatment represents American invention at its best. It has been a bit slower than most people would think to go through the discovery and development process of 1-methylcyclopropene (1-MCP). Edward Sisler, Biochemistry, NCSU, and I had both been working on ethylene for years. We were interested in the ethylene binding sites and wanted to find a chemical "tag" to help us keep track of the sites so we could study them. We didn't have large amounts of research money, mostly contributions from industry people and growers, although we did get one grant. We had an unknown compound that we knew worked great to inhibit ethylene. Through many experiments and trips to the library we found that the small cyclopropenes (which are gases) acted as strong ethylene inhibitors. We used carnations as our test plant because we could quickly see the results. I had also treated apples and tomatoes. Ripening inhibition was dramatic. Realizing that there could be some commercial use, we started through the University patent process. A number of months went by. I remember sitting in my office looking at a pile of rejection letters from all sorts of companies saying they had no interest in helping us with our patent. Just as things were looking pretty grim, a horticultural connection introduced us to the people from Floralife. Floralife expressed interest and a small and dedicated group of people from the company started making 1-MCP a commercial reality. Dr. Sisler and I, as co-inventors, were issued a patent in 1996. Floralife incorporated 1-MCP (a gas) into a white powder that was much easier to use. In time "EthylBloc" went on sale for ornamental crops. Because my specialty is fruit postharvest physiology, I still had dreams of 1-MCP being used by fruit and vegetable growers. Floralife, teamed up with Rohm and Haas (Now AgroFresh, see below), and the long process of government clearance started for edible products. The people at AgroFresh have worked tirelessly to get all the necessary approvals. Government clearance is expected in 2002. For edible products, 1-MCP will be called "SmartFresh." The postharvest research and extension community working with 1-MCP have been working hard to anticipate the questions and needs of industry and I hope when it goes on sale for edible products that everyone who has helped with this technology yells, "Eureka!"