

Letter to the Editor

Warren Goss recalls trip to Germany

An interesting article in last June's issue (P. 454A) referred to my having inspected oilseed mills and refineries in Europe during the latter part of World War II and my observation that many German producers of edible oils were using citric acid in the deodorization step to achieve flavor stability. Some of the Journal's readers might be interested in additional information, especially certain subsequent observations.

We didn't have to break down any secret formulas or unravel any mysterious processes. The German scientists with whom I discussed this matter were very frank and were not reluctant to describe their processing procedures as well as what they knew about flavor stability. We became much better acquainted with some of them in subsequent years. One of them in particular later joined us in this country and worked with us for 10 years, during which interval we studied the citric acid treatment and learned a great deal about how to (and how not to) make it work.

The citric acid treatment can be very effective at preventing reversion in soybean oil, but only when starting with a crude oil that has not been damaged. Most crude soybean oil produced in this country at that time, however, was irreparably damaged before it reached the refinery. I don't know whether that is still the case. In European mills the extraction and refining were conducted on the same premises, and just one quality control staff supervised all the operations from start to finish. The American refiners, on the other hand, were at a disadvantage in this respect because mostly they procured crude oil as a bulk commodity, produced at distant extraction plants and purchased in accordance with trading rules that did not distinguish between damaged and undamaged oils. The soybean processor got the same price for the oil regardless of whether he was careful or careless about exposing it to oxidizing conditions.

In order to make truly reversion-proof soybean oils, when evaluating the citric acid treatment, we found it necessary to extract the oil ourselves in a pilot plant and to remove the solvent under strictly controlled conditions that precluded any preliminary oxidation. The steam used for stripping must be oxygen-free. The same holds true, of course, for the steam used in deodorization.

There are other ways to make reversion-resistant soybean oils. I've been somewhat removed from that field for 25 years and consequently am not up-to-date. Reversion was a very controversial subject back then, and some of us were unbearably opinionated about it. I still frequently encounter in nearly all brands of American margarine a flavor that I used to associate with reverted soybean oil, but similar flavors develop in the margarine made from corn oil. Apparently the consumers mostly don't detect this reversion or don't object to it.

Many of our members will remember the German scientist I refer to, Dr. August F. Gehrke, who came here and helped us evaluate the citric acid treatment. He was a member of our Society and also was a director of our sister organization in Germany, the Deutsche Gesellschaft für Fettwissenschaft. Dr. and Mrs. Gehrke now live in Hamburg, but he has been in failing health during recent years.

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