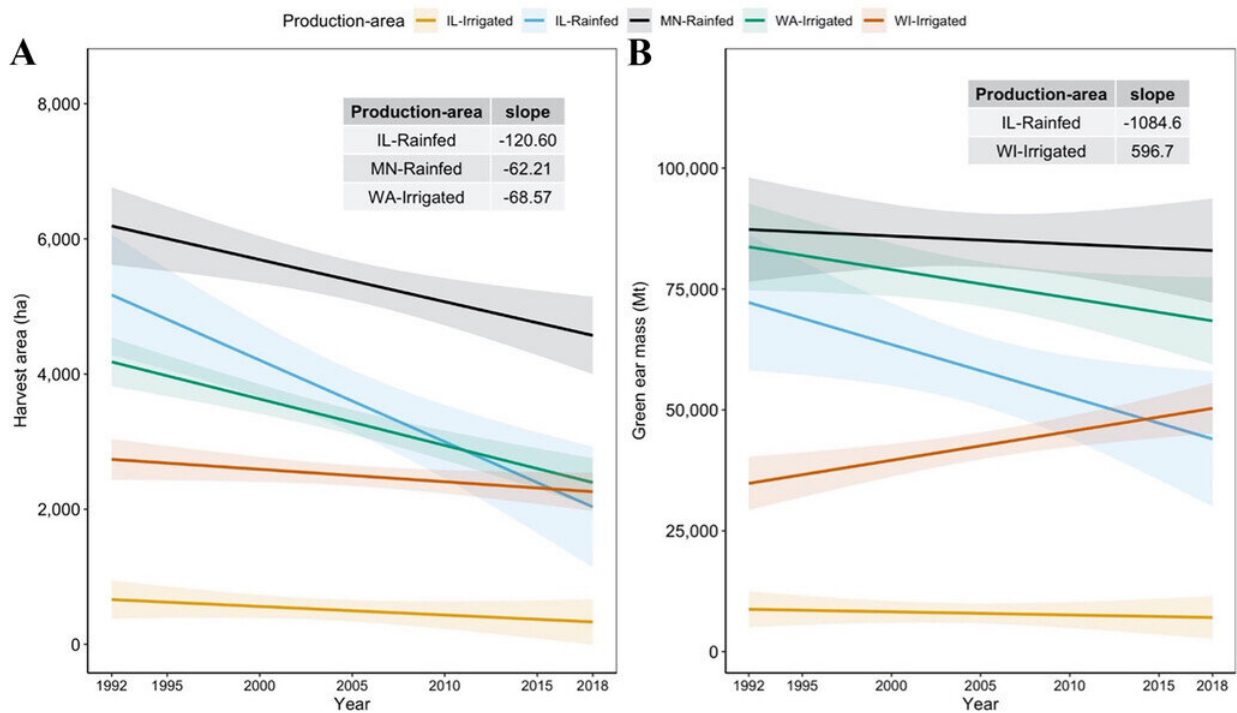


Canned, frozen corn industry struggling across US growing regions

July 10 2023, by Lauren Quinn



Trends in (A) total processing sweet corn harvest area (hectares) and (B) total processing sweet corn production (green ear mass, Mt) over years 1992 through 2018 across different production areas. Simple linear regression models described the relationships. Ninety-five percent confidence intervals are shown by the shaded regions around the line of best fit. Slope estimates significant at alpha level 0.05 are shown. Credit: *HortScience* (2023). DOI: 10.21273/HORTSCI17109-23

For those whose primary experience with corn is the butter-drenched cob variety, it might come as a surprise that other forms of sweet corn are in trouble. A new University of Illinois Urbana-Champaign analysis shows sweet corn production for frozen and canned products has been steadily shrinking in the U.S. over the past 27 years, particularly in rainfed portions of the Midwest.

"The processing sweet [corn](#) industry [corn grown for canned and frozen products] was thriving in the U.S. throughout the 20th century. This type of production, as opposed to fresh-market corn on the cob, makes up the majority of sweet corn acres in the U.S. To see such success in a crop and then signs of struggle in recent decades is a disturbing trend," said senior study author Marty Williams, USDA-Agricultural Research Service (ARS) ecologist and affiliate professor in the Department of Crop Sciences, part of the College of Agricultural, Consumer and Environmental Sciences (ACES) at U. of I.

Williams and co-author Daljeet Dhaliwal obtained proprietary data from major vegetable processing companies who kept records for 20,000 processing sweet corn fields between 1992 and 2018. They split the data into five distinct production areas, reflecting the major water management practices in each: Illinois irrigated, Illinois rainfed, Minnesota rainfed, Washington irrigated, and Wisconsin irrigated. From there, they analyzed trends in planting acres, green ear mass (yield), hybrid lifespan, and more.

"We saw a decline in acreage throughout production areas in the Midwest and Pacific Northwest, the regions where most processing sweet corn production is happening. The one area that bucked the trend and showed an increase in green ear mass was in irrigated fields of Wisconsin. The steepest declines were in rainfed locations here in the Midwest, particularly Illinois," said Williams, who is with the ARS Global Change and Photosynthesis Research unit, located on the

university's Urbana campus.

Compared with irrigation, rainfed production is inherently more variable and, according to the data, increasingly risky for sweet corn production in parts of the Midwest. Williams said wide swings in precipitation, particularly drought at key growth stages, almost always show up in yield. That's what seems to be happening in Illinois rainfed systems, where the data showed a precipitous drop in green ear mass in recent years.

Although the analysis was designed to illustrate long-term trends, not causes, Williams and Dhaliwal recently found a strong relationship between extreme temperatures and sweet corn yield loss, implicating [climate change](#). Another cause for the shrinking sweet corn production area is consumer preference, as more Americans are choosing fresh produce over canned products.

The team found few changes in planting date and density over the 27-year period—not entirely surprising given industry standards. But when the team tracked individual hybrids grown across 20,000 fields, a couple of unusual patterns stood out.

"The majority of hybrids, 60%, were grown only a single year. There was clearly some industry interest in looking for new germplasm, new products, to grow, but most hybrids didn't make the cut long-term. However, there was one hybrid grown for 27 years. It was the single biggest, most important hybrid out there, accounting for about a quarter of the acres," Williams said. "That is so vastly different than field corn production, where a hybrid's lifespan is just a few years."

The pattern supports earlier research from Williams' team showing a preference among sweet corn processors for "workhorse" hybrids—those that perform reliably and consistently across a wide

range of conditions. Williams noted processing sweet corn has to tick more boxes than field corn or even fresh market corn on the cob in terms of maintaining its structure and flavor during cob removal, canning, or freezing.

"Vegetable processors in the U.S. have to make decisions on what to grow on tens of thousands of acres. Having some knowledge of past performance helps in planning what to grow, where, and when," he said. "But the pattern also suggests change comes slowly in sweet corn production. The adage 'past performance does not guarantee future results' is a warning, especially if environmental conditions are changing."

The dataset can't predict where the industry will go next, but Williams sees a potential for regional shifts in production areas, such as moving into locations with more irrigation infrastructure. He also thinks developing more climate-resilient, stress-tolerant hybrids will be an important investment for seed companies, regardless of where they plant.

The study is published in the journal *HortScience*.

More information: Daljeet S. Dhaliwal et al, An Outlook on Processing Sweet Corn Production from the Last Three Decades (1990s–2010s), *HortScience* (2023). [DOI: 10.21273/HORTSCI17109-23](https://doi.org/10.21273/HORTSCI17109-23)

Provided by University of Illinois at Urbana-Champaign

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