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2022 Potato Industry Status at the Eastern Shore of Virginia

Authored by Emmanuel Torres Quezada, Assistant Professor of Horticultural Cropping Systems and Extension Specialist, and Alexis Suero, Graduate Student, Eastern Shore Agricultural Research and Extension Center, Virginia Tech; Ursula Deitch, Domestic Marketing and Promotion, Virginia Department of Agriculture and Consumer Services; Theresa Long Pittman, Unit Coordinator and Extension Agent, Agriculture and Natural Resources, Virginia Cooperative Extension.

Potato history on the Eastern Shore

Potato (*Solanum tuberosum*) production on the Eastern Shore of Virginia has a rich history dating back to the 19th century. The Eastern Shore's sandy soils and moderate climate proved ideal for potato cultivation. Potatoes in Northampton County date back to 1845, a county that in time will hold the distinction of being the primary potato supplier for the entire United States (Northampton County, 2023). On the other hand, by the 1830s and 1840s, Accomack was a thriving agricultural county that was making the transition from staple crops to commercial vegetables. Sweet potato was the primary crop with the highest yields in 1840, with other important crops closely behind, such as Irish potatoes (Raynolds, 2017).

The Eastern Shore region significantly contributes to Virginia's potato production, accounting for a remarkable 80% of the state's total potato crops, solidifying its status as the largest potato production area in the Commonwealth. After the Civil War, improved transportation via steamboats, railroads, and trucks opened new markets for Eastern Shore farmers and fishermen. Despite its rural character, the Eastern Shore's economy had always been intertwined with the national market. Faced with competition from cheaper Midwestern grain, local farmers shifted from oats to fruits and vegetables, with potatoes emerging as a key crop (Northampton County, 2023).

By 1924, Eastern Shore farmers were harvesting close to 13,000,000 bushels (7,800,000 cwt) of Irish potatoes. In 1928, the Eastern Shore Produce Exchange alone required 23,000 railroad boxcars to transport the harvest. Achieving these remarkable yields involved mechanization, pesticide and fertilizer use, and a reduction in other crop acreage.

Nowadays, Virginia's potato farmers primarily focus on growing white potatoes intended for the fresh market and chip manufacturing. However, they also cultivate other varieties like red, russet, and gold potatoes to diversify their offerings (Northampton County, 2023).

The Importance of an Industry Assessment

Industry assessments offer vital insights into the current state of an agricultural system. They encompass critical aspects such as market trends, competitive dynamics, and growth prospects. These insights serve as valuable tools, empowering farmers, extension agents, and researchers to make informed decisions and formulate effective strategic plans. Moreover, these assessments play a pivotal role in stimulating research efforts and fostering innovation by identifying industry challenges, emerging trends, and stakeholder preferences.

Industry assessments also serve as crucial instruments for extension agents and researchers to improve their engaging methods with stakeholders, enhancing transparency in research endeavors, and cultivating trust with farmers. In 2022, researchers from the Eastern Shore Agricultural Research and Extension Center collaborated closely with extension agents from the Eastern Shore to conduct an IRB-approved survey on potato farmers in Virginia's Eastern Shore region. The primary objective was to develop an industry assessment that

would provide valuable guidance for future research and extension initiatives, ultimately contributing to the advancement of the potato farming sector in the area.

2022 Industry Status

Potato farmers in the Eastern Shore planted an average of 2,095 acres in 2021 and 1,915 acres in 2022, resulting in an 8.6% reduction in the production area between years. Cultivar selection plays an essential role in the planning process for farmers each season. Nearly 75% of the farmers hand-picked their cultivars based on personal experience, while 12.5% prefer specific gravity as a selection parameter; the remaining farmers usually rely on seed companies' recommendations for selecting their cultivars each year.

By area, the most planted potato cultivars are 'Superior,' 'Arizona,' 'Envol,' 'Atlantic,' 'Snowden,' 'Columba,' 'Suraya,' 'Red Norland,' 'And Lija,' as well as a few proprietary clones from private companies dedicated to the production of potato chips. Nearly 87% of the farmers conduct a soil test before planting their crop; in some cases, soil fumigation is implemented, although many perceive this practice as economically inaccessible. Planting dates range between late February (February 20) and early April (April 7).

Planting rows are standardized to 36 inches, but in-row spacing tends to vary by the selected cultivar. For example, 'Superior' is usually planted 8 inches apart, 'Arizona' is planted at 9 inches, and 'Envol' at 10 inches of in-row spacing. In general, in-row spacing ranges between 8 and 11 inches.

All farmers include a pre- or at-planting application of dry fertilizer and conduct up to 2 more fertilizer applications during the season. Farmers might include a foliar fertilizer application to the plant or liquid formulations to the furrow if deemed necessary. Total applied N-P-K rates vary among farms and usually originate from the grower's experience and knowledge of each field. All farmers in the Eastern Shore have access to overhead irrigation. However, their irrigation regimen will primarily be determined by their personal experience with minimal support of technical tools or methods.

Farmers will drag off the crop one time in the season for weed control and cultivate (hilling) up to three times. Farmers will also monitor insects and diseases every week, with 85% of them reporting being “very confident” in identifying pests in their fields. Wireworms, Colorado Potato Beetles, and nematodes are the most common insect pests reported, while Early blight, Late blight, and Fusarium Dry Rot were also reported as challenging diseases.

Harvest time will vary by the selected cultivar and grower's preference, with the harvest season usually starting in the first week of June and the last few harvests happening by early August. Their harvest schedule is based on a combination of days after planting, market tendencies, tuber sizes (>2.5 inches), and skin set. On average, potatoes will stay in the ground between 110 and 130 days. About 75% of the farmers vine-kill their plants before harvest using Diquat dibromide. Marketable potato yield ranges between 150 and 250 cwt per acre.

Current Industry Challenges

In 2022, potato farmers reported fertilizer prices, labor availability, wireworms, market prices, excessive rainfall, and changing weather conditions as industry challenges with a high level of concern (above 8). Managing their fertilization and irrigation seems to be a mid-level concern for farmers, and not necessarily a priority. Similarly, disease management, such as Early and Late Blight, and Fusarium Dry Rot does not seem to be of real urgency compared to the rest of the subjects However, it is important to note that weather patterns and disease pressure from season to season can change drastically, which in turn could rapidly change farmers perspective (Figure 1).

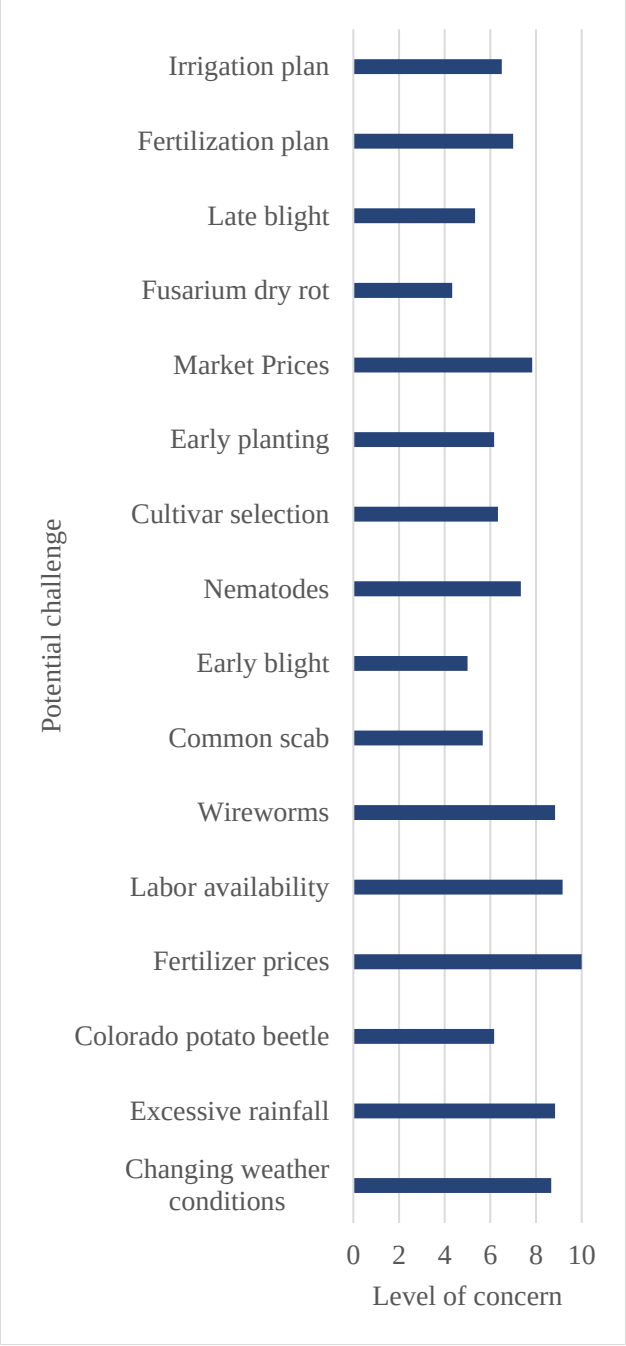

Figure 1. Challenges of the potato industry reported by farmers in 2022 in the Eastern Shore of Virginia

Horticultural Research Priorities

Potato farmers highlighted several areas of concern that merit attention and focus for research efforts. Soil analysis scheduling emerges as a top priority, with a concern level of 9.5 out of 10, indicating a critical need for timely and accurate soil assessment methods. This could play a pivotal role in enabling farmers to make informed decisions regarding fertilization and other soil management practices and could also be extended to further research focusing on holistic approaches to fertilization management. Accessibility to accurate weather data was also highlighted as a priority as it could provide support for immediate decisions regarding planting, irrigation, and harvesting. Additionally, soil water sensors and tensiometers followed in priority order, emphasizing the need for research in irrigation management (Figure 2). Although not mentioned in the survey, there is a common consensus among farmers about the importance of evaluating new potato varieties. Farmers understand that the current varieties work well for the Shore, but they also understand that breeding and testing takes time, and the efforts should be put in place promptly, in preparation for the future.

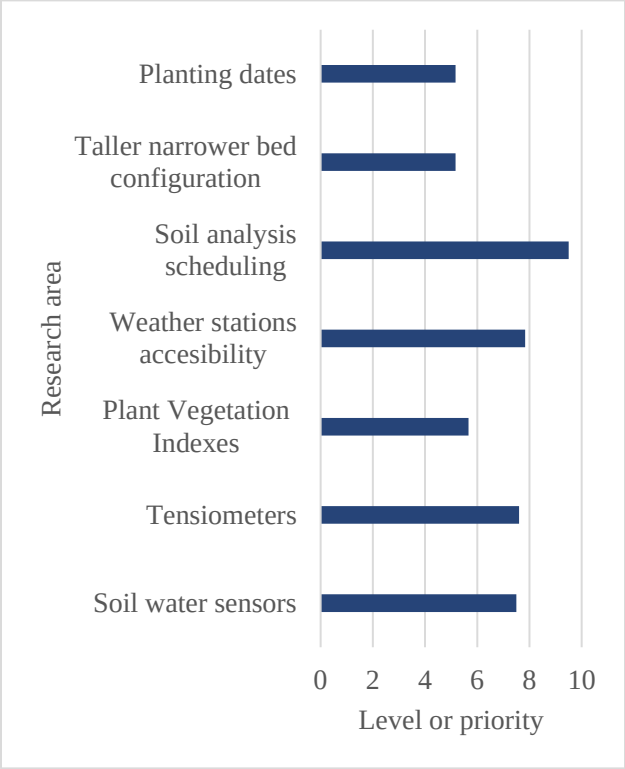

Figure 2. Potential areas of horticultural research suggested by potato farmers in 2022 at the Eastern Shore of Virginia

Communication preferences

Potato farmers exhibited a pronounced preference for email communication (8.7 out of 10), denoting the need for timely, direct, and informative communication in a digital format. Annual conferences also emerged as a notable preference, revealing a tendency towards interactive platforms where extensive information, networking, and discussions can occur. Personal communication was similarly valued, highlighting the importance of individualized and direct interactions. Conversely, other modes such as workshops, Facebook, and other social media platforms reflected lower levels of preference, indicating a reduced reliance on these mediums for acquiring information and updates (Figure 3). Overall, it seems potato farmers prefer personalized and interactive communication, although this could be achieved through digital means to ensure efficient and effective information exchange within the farming community in Eastern Shore of Virginia.

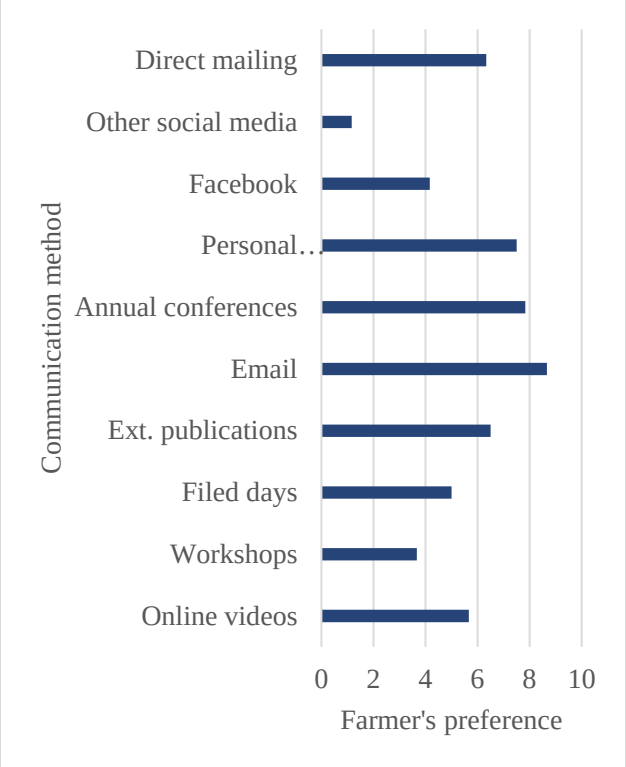

Figure 3. Preferred avenues of communication reported by potato farmers in 2022 at the Eastern Shore of Virginia

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2023 SPES-522NP