



# Commission for Agricultural Education Excellence

Report to the General Assembly • May 2020



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DEPARTMENT OF AGRICULTURE



**pennsylvania**  
DEPARTMENT OF EDUCATION

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## Introduction

Agriculture is at the heart of Pennsylvania's economic and cultural landscape, and the commonwealth is recognized as a national – and global – leader in the agriculture and food industry. Nearly 580,000 Pennsylvanians – or one in 10 jobs – are in the agriculture and food industry. Over the next decade, more than 75,000 new and replacement jobs will become available in the agriculture and food industry.

In 2017, the General Assembly amended the Public School Code of 1949 to establish a state Commission for Agricultural Education Excellence to assist in developing a statewide plan for agricultural education and coordinating implementation of related agricultural education programming within the Pennsylvania Departments of Agriculture and Education. See Appendix A.

Among its legislative duties, the commission is charged with annually gathering extensive information from agricultural and education experts from across the commonwealth and the nation and making recommendations to enhance agricultural education in the commonwealth. 24 P.S. § 15-1549.1 also requires the commission to submit a report to the Governor and the General Assembly on the status of agricultural education in this commonwealth by May 1. The report shall:

- Outline agricultural education programs and achievements
- Assess the trends and needs in secondary and both formal and informal post-secondary agricultural education and training
- Investigate and assess workforce trends of the agricultural and food industry
- Assess and make programming recommendations for meeting the training needs for individuals not pursuing formal post-secondary education
- Consider the way funds are used to support agricultural education activities
- Highlight new initiatives and recommend future program needs
- Make recommendations to the Governor and the General Assembly regarding legislative or regulatory changes to improve agricultural education.

The following annual report outlines the commission's accomplishments during the 2019-2020 program year, provides an overview of agricultural education in Pennsylvania, and outlines recommendations for consideration moving forward.

## Commission Accomplishments

Over the last two years, the commission pursued its Work Plan for 2018-2020 (Appendix C), investing in a variety of initiatives to support FFA participants; students, in general; and teachers with the goal of improving general literacy around agriculture and food, attracting people in the career pathways that lead to careers in the agriculture and food industry, and strengthening the “three circle model” of agricultural education that includes classroom instruction, FFA and the Supervised Agricultural Experience (SAE).

- Contracted with the Center for Professional Personnel Development at Penn State University to provide consultation with local agriculture educators to get more young people involved in doing SAE projects and to improve the advisory function of program occupational advisory committees.
- Reimbursed bus transportation costs and provided on-site resources for Farm-City Day in October 2019 and STEM Day at the Pennsylvania Farm Show in January 2020, with attendance of 2,500 young people and 1,900 adult leaders.
- Contracted with the Center for Professional Personnel Development at Penn State University to design and provide teacher training courses in electronics and hydraulics to fill the gaps that many teachers have in agriculture mechanics skills.
- Provided recordkeeping training that benefited all agricultural education students in the system related to their advancement in FFA programming.
- Funded continuing education opportunities for 34 teachers.
- Worked with PDE to add a vocational certificate for teachers from industry in six curricular areas within agriculture education.
- Established a place for agriculture education curriculum on the Standards Aligned System (SAS) portal from PDE.
- Created an ongoing task group of individuals and organizations from formal and informal educator stakeholders to study and network information, curriculum, and best practices around K-8 programming.
- Engaged the Communications Office at PDA to create a social media campaign around agriculture and food careers focused on parents of children in grades K-8.



## **Commission Research**

Throughout the 2019-2020 program year, the commission met four times to pursue the planning and program implementation part of its mandate. In addition, the Executive Director of the commission, the designated personnel from PDE and PDA who provide staff time to the commission, the Executive Director of Pennsylvania FFA, and contractors from the Penn State Center for Professional Personnel have worked together to pursue the existing Work Plan of the commission.

Through presentations at its meetings and activities of various workgroups and staff, the commission has taken its fact-finding role seriously, interacting with stakeholders to address the elements mandated by the School Code. Below is a list of these activities:

- Led by several innovative local programs, commissioners explored the role of STEM and agriculture science in adding to the diversity of agriculture education programs.
- In consultation with teachers, it explored gaps in the training of agricultural education teachers and in the practice skills of teachers who are currently in the classroom.
- In partnership with industry, members heard about some problems of relevance with the agricultural education curriculum to the needs of employers.
- With the help of the largest school district in the state, the commission received input on the way various regulations affect the agriculture teacher shortage.
- With input from several best-practice districts, commission staff spent time in understanding the ground swell of agriculture content being used in STEM programming in elementary and middle schools.

## **Findings from Direct Testimony and Presentations**

- There is a continuum in the way that agricultural education programs use agriculture science and other STEM content in the mix of courses in their curriculum that ranges from very heavy (sometimes to the exclusion of traditional agricultural education programming) to very light (with a continuing concentration on the “trade” parts of agricultural education). Presumably, that variety relates to the needs of the agriculture and food industry in the local area.
- However, the industry in its various iterations has raised some serious questions about the relevance of agricultural education programming to the career pathways that lead to the occupations the industry needs to staff its operations.
- There is further evidence that there are deficits in the ability of teachers to teach the content of the knowledge and skills that industry requires, but that current curriculum does not address.
- Solutions to these knowledge and skill gaps will require changes to the content of teacher training, finding ways to remediate the gaps the current teachers have, and the

introduction of new forms of certification that allow subject matter experts from industry to teach.

- There is an overall shortage of agricultural education teachers in Pennsylvania.
- One outgrowth of STEM programming in K-8 has been increased interest in agriculture and food content in those grades, which has expressed itself in an interest in new content, in new curriculum, and in increased cooperation with more informal forms of content delivery. This trend is being led by people at the local level.

## Key Variables

As a part of evaluating its impact on agricultural education, the commission has adopted key variables or indicators that relate to the size of the system, its engagement with students, the impact of a key curricular component (SAE), the ability of the teacher training system to provide teachers, and the use of industry credentials in education programming. The commission's intention is to track 4-5 years of data so that we have benchmarks for current programming results.

A preliminary analysis of key variables indicates that the agricultural education system is rather stable on all accounts, but with some concerns around an overall decline in program completers, a decline in the value of SAE projects, and decline in the use of industry credentials in agriculture education programming.

**Figure 1**

Indicator	2016-2017	2017-2018	2018-2019	2019-2020
Number of FFA chapters	146	143	144	146
Number of Agriculture Education students	12,897	12,946	12,831	13,047
% of completers among participants in secondary-level, approved ag programs	12.39%	11.68%	9.79%	
Participants Completers	6,898 855	7,197 841	7,096 695	
Percentage of students involved in SAEs	9,135 63%	9,531 63%	9,642 63%	-
Economic impact of SAEs	\$5,307,543	\$5,138,388	\$4,485,717	-
Net unfilled teaching positions	4	3	4	
Open positions Filled positions	17 13	12 9	8 4	



Number of ag and food industry certifications earned by students in the system	1,810	1,342	1,277	-

# **Agricultural Education Programs and Achievements**

## **K-12 Agriculture Education in Pennsylvania**

While Pennsylvania has adopted rigorous academic standards establishing expectations for what students should know and be able to do at key points in their education, the commonwealth also has a strong tradition of local control guiding K-12 public education, including agriculture education programs. This means that each local education agency (LEA) has the authority to tailor program offerings, aligned to standards and regulations, to the unique needs of their students and communities.

In 2019-2020, there were 165 PDE-approved agriculture education programs offered in nine categories (Ag General, Ag Mechanics, Ag Production, Ag Food Products, Applied Horticulture, Animal Sciences, Ag Operations, Natural Resources, and Forest Technology) by 125 high schools and career and technology centers (CTCs) across the commonwealth. Approximately 30 additional programs are offered by public schools, but not approved by PDE. There are five middle school agriculture programs and four that are offered in private secondary schools.

There were 253 secondary agriculture teachers in the commonwealth with two agriculture education certification programs: Penn State University and Delaware Valley University. A total of 922 people hold an Instructional I certificate and 970 have an Instructional II certificate in agriculture. In the 2018-2019 school year, 27 individuals applied for agriculture education instructional certification.

Agriculture education at the secondary level is a three-part process that includes classroom instruction (focus on knowledge and skill attainment), involvement in FFA (focus on soft skills and leadership development), and completion of supervised agriculture experiences (focus on independent learning through a project-centered approach). Completion of components of this process can lead to recognition through four FFA degrees (Greenhand, local; Chapter, local; Keystone, state; and American, national). In 2019-2020, 74 Pennsylvania students completed the American degree, while 405 earned the Keystone recognition. These degrees qualify the FFA member for scholarships and recognition that can advance their progression through various career pathways that include higher education and training.

There are 146 FFA Chapters in Pennsylvania with 12,156 members. The number of chapters has remained relatively stable (slight growth from 142 in 2007-2008), while the number of participating students has grown considerably (from more than 7,500 in 2007-2008). W.B. Saul High School of Agriculture Sciences in Philadelphia is one of the largest FFA chapters under one roof in the country, with more than 500 members. The number of chapters continue to fluctuate slightly, but the trend is generally toward more chapters being formed.

A critical and unique component of formal agriculture education is the SAE. It is a pedagogical methodology that works for many students because it is an opportunity to apply what they learn in the classroom in a real-world environment. An SAE can be built around an experiment or set of observations in a laboratory, the business side of raising an animal, a part-time job, or related to their career path. The goal of the SAE is to allow the student to learn independently (but still



under the supervision of a teacher) and take responsibility for documenting a project through a hard-copy or digital recordkeeping process.

Metrics from the Agricultural Experience Tracker (AET) have captured the growth of SAEs in agriculture education and the economic impact of the projects that have been undertaken. In the 2018-2019 school year, there were 9,642 projects undertaken by agriculture education students in Pennsylvania, which reflects a 63 percent participations rate. More importantly, these projects had an economic impact of \$4,485,717 in the economy of Pennsylvania in 2019.<sup>1</sup>

Agriculture education is closely connected with CTE and shares federal Perkins Act funding with other CTE training that ranges from auto repair to machine operation and repair to information technology to health care occupations of all kinds. Administration of agriculture education at PDE resides in the Bureau of Career and Technical Education. Agriculture education and other PDE-approved CTE programs can be provided at high schools or regional CTCs. Approximately 74 percent are offered in comprehensive high schools.

## **Postsecondary Agriculture Education in Pennsylvania**

At the postsecondary level, there are numerous opportunities for educating and training the management, engineering, and scientific professionals at the top of the agriculture workforce pyramid. The Pennsylvania State University is the state land grant school with nine academic departments, 17 undergraduate majors and 22 minors, three two-year programs, and three certificate programs in the College of Agriculture. Majors include agribusiness management, animal science, food science, toxicology, environmental resources management, plant sciences, biological engineering, wildlife and fisheries, and many others. Annually, there are roughly 3,000 undergraduates in the college overall, with 2,100 at University Park with the remainder of student in Commonwealth Campuses or World Campus programs. There are 580 graduate students in agriculture.

Also, the School of Agriculture and Environmental Sciences at Delaware Valley University offers majors in agribusiness, animal sciences, equine science, food science, landscape architecture and environmental sciences, and plant sciences, with roughly 900 students enrolled in its programs.

While there are other postsecondary programs that teach skills related to the agriculture and food enterprise, particularly around manufacturing and transportation, most postsecondary institutions in the commonwealth do not have formal programs or offerings related to agriculture, environmental, and food sciences.

There are several options available for individuals who are interested in continuing their education beyond high school, but who do not wish to pursue a formal degree or certificate.

- Penn State Extension is present in every county in the commonwealth delivering expertise through training and technical assistance directly to agriculture producers and processors. Extension provides training and technical assistance in topics related to

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<sup>1</sup> Agricultural Experience Tracker, 2020

livestock, field and forage crops, tree fruit production, forest resources, vegetables, food safety, and the business of agriculture.

- Industry associations such as the Farm Bureau, the Professional Dairy Managers of PA, PennAg Industries, and many others offer their members the latest technical and market information in the industry through meetings, training sessions, and other outreach. The Pennsylvania Young Farmers' Association assists those in production agriculture and agribusiness to become successfully established or to improve their current agricultural status.

Production workers have far more limited educational opportunities. Federal data suggests that a significant majority of field and production workers in agriculture have not completed a high school education, and have low literacy and English proficiency levels.<sup>2</sup> The lack of short-term, skilled-based training offered bilingually for migrant and seasonal farmworkers was identified as a significant barrier for promoting the economic success and well-being of workers and the agriculture and food industry as a whole in Pennsylvania.<sup>3</sup>

## Workforce Trends of the Agricultural and Food Industry

Agriculture production<sup>4</sup> is a vital part of Pennsylvania's economic and cultural landscape, and is at the heart of a larger agriculture and food cluster that produces more than \$131 billion in total sales of products annually<sup>5</sup>, employs more than 950,000 people across the commonwealth<sup>6</sup>, and engages more than 7.2 million acres of the state's total landmass.<sup>7</sup> The infrastructure of the cluster provides fresh and processed food products to the more than 52.3 million people who live on the northeastern seaboard of the United States (Boston to Richmond).<sup>8</sup> Just as importantly, the production infrastructure provides substantial support including seed, feed, equipment, lending, and technical and support services for agriculture enterprises in the mid-Atlantic states.

While the Pennsylvania agriculture economy is primarily animal-based (dairy, poultry, and swine), the commonwealth also leads the nation in the production of agaricus mushrooms and

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<sup>2</sup> U.S. Department of Labor, *Findings from the National Agricultural Workers Survey (NAWS) 2013-2014*, December 2016.

<sup>3</sup> PA Department of Labor and Industry, Pennsylvania Workforce Innovation and Opportunity Act (WIOA) Combined State Plan, March 2016.

<sup>4</sup> Section 3 of the Agricultural Area Security Law (Act of June 30, 1981, P.L. 128, No. 43)(3 P.S. §§ 901-915) defines "Agricultural production" as "The production for commercial purposes of crops, livestock and livestock products, including the processing or retail marketing of such crops, livestock or livestock products if more than 50 percent of such processed or merchandised products are produced by the farm operator. The term includes use of land which is devoted to and meets the requirements of and qualifications for payments or other compensation pursuant to a soil conservation program under an agreement with an agency of the Federal Government." 3 P.S. § 903.

<sup>5</sup> Economic Modeling Specialists International, Analyst, Moscow, ID, 2017

<sup>6</sup> Ibid.

<sup>7</sup> U.S. Department of Agriculture, 2017 Census of Pennsylvania

<sup>8</sup> *America 2050, Northeast*, [www.america2050.org/northeast.html](http://www.america2050.org/northeast.html)

is in the national top ten of fruit products, particularly apples, as well as products like Christmas trees, butter and certain cheeses, and maple syrup. Both dairy products topped \$1.8 billion of cash receipts in 2018, with eggs, broilers and cattle all above \$500 million each.<sup>9</sup> Cash receipts from agriculture commodities tallied \$6.7 billion in 2015, with more than \$2.05 billion in international exports of agricultural products.<sup>10</sup>

In Pennsylvania, one in 15 jobs are related to the agriculture and food industry. There were just over 70,000 farm operators with farming as their primary occupation in 2017 but there are nearly 500,000 people employed in the agriculture and food industry in jobs that are as diverse as farmers to foresters and from mechanics to agronomists and veterinarians.<sup>11</sup> The agriculture and food workforce is very diverse with foreign-born workers comprising more than 70 percent of the production jobs in the industry.<sup>12</sup> The PA Department of Agriculture has identified 48 occupations that will be the key growth occupations for the next 10 years, based on anticipated growth. They alone will require more than 75,000 new and replacement workers going forward.<sup>13</sup>

## **The Broader Agriculture and Food Industry**

Pennsylvania agriculture extends well beyond traditional boundaries into a number of areas that make its product inventory much more diverse and robust.

- Pennsylvania is a national leader in the production of hardwoods, that are exported abroad as well as processed in Pennsylvania for lumber and finished wood products.<sup>14</sup> The total sales of lumber and wood products in 2015 was \$16.1 billion of direct sales, and an estimated \$33.4 billion in sales including related supply and distribution chains.<sup>15</sup>
- The Christmas tree industry alone in Pennsylvania has 32,000 acres under cultivation, fourth in the United States.<sup>16</sup>
- Finally, Pennsylvania is a food processing giant, not only because of the abundant agricultural product in the area, but also because of the location of Pennsylvania relative to east coast markets. Manufactured food products totaled \$43.7 billion in 2015 or more than \$119 billion if one adds sales that are related to the extended supply and distribution chains. Pennsylvania processes and packages mushrooms; snack foods; milk, ice cream, butter and cheese; ham, hot dogs and meat products of all kinds; eggs; and cereal. It rivals the Chicago area, a national leader, in the confectionery part of the industry.

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<sup>9</sup> Economic Research Service, USDA, *State Fact Sheets*, Pennsylvania, 2018

<sup>10</sup> Ibid.

<sup>11</sup> U.S. Department of Agriculture, 2017 Census of Pennsylvania

<sup>12</sup> PA Department of Agriculture, *Fast Facts on the Role of Foreign-Born Workers in the Hired Farmworker Labor Force*, January 2017.

<sup>13</sup> Economic Modeling Specialists International, Analyst, Moscow, ID, 2019

<sup>14</sup> U.S. Department of Agriculture, *Forest Service Forest Inventory Analysis*, FIADB version 6, Population Estimates, January 2017

<sup>15</sup> Economic Modeling Specialists International, Analyst, Moscow, ID, 2017

<sup>16</sup> U.S. Department of Agriculture, *2014-2015 Agricultural Statistics Annual Bulletin*, Pennsylvania

## **Changing Attitudes about Food and Farming**

While the traditional agriculture and food industry in Pennsylvania is very large and established, it is being gradually reinvented by new attitudes among consumers. Specifically, consumers are increasingly looking for food to be pure, processed with a minimum of additives, as local as possible, and distributed equitably. The trends related to these changing attitudes about food are far-reaching and include new thinking about what is being grown, how it is being grown, how it is being processed, and how it is transported to market.

Consumers are not only demanding crops with a minimum of engineering and additives, and animal-based products from animals raised humanely, they are also buying through newly-expanded food distribution channels (direct from producer, consumer-supported agriculture, farmers markets) and, in many cases, participating to one degree or another in production themselves. Organic products are some of the fastest-growing segments of the agriculture and food industry, as are direct-to-consumer marketing structures. Pennsylvania is a leader in both categories.<sup>17</sup>

In the midst of responding to these changes in consumer attitudes, production agriculture is also undergoing a revolution in the way it uses new technology. No-till farming has changed the way crops are grown, while at the same time addressing important issues related to recharging local water tables. Best practices in manure management have not only addressed the amount of runoff in local watersheds but, in many cases, are generating electricity for farm operations. New equipment is being guided by global positioning systems. Crops are being surveyed and planned using drones. Vertical farming using hydroponic and aquaponic systems are springing up in urban settings offering new methods for crop production in confined spaces using year-round growing options.

## **Trends and Needs in Secondary and Formal and Informal Post-Secondary Agricultural Education and Training**

As the needs and practices of the agriculture industry have grown and evolved, so too has the workforce that supports those vital efforts. In particular, commission members noted – and data and research reaffirm – the continued need for education and training that allows current and future workers to meet the demands of the agriculture and food industry.

Broadly, the workforce for the industry, as in most industries, is like a pyramid with a small number of management, engineering and scientific professionals at the top; a significant number of supervisory and technical people in the middle; and many production people at its foundation. The professionals at the top rely on a base of knowledge and skills that are usually taught in the agriculture and management schools of institutions of higher education. The middle layer of supervisory and technicians usually acquire the knowledge and skills they need through technical education provided at the high school, community college and technical

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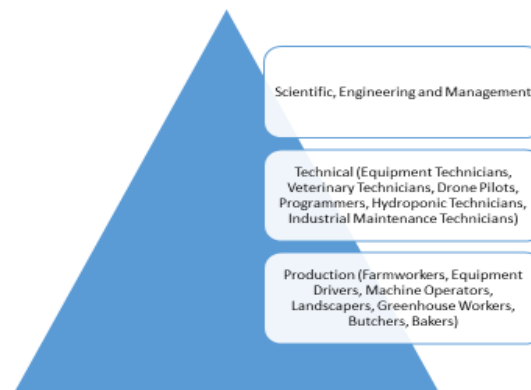
<sup>17</sup> U.S. Department of Agriculture, National Agricultural Statistics Service, *Pennsylvania Organic Growers Second in Nation in Sales*, news release, September 22, 2017.

school levels. Production workers normally receive on-the-job training from their employers rather than through any formal education system.

**Figure 2**



## The Agriculture and Food Industry Workforce



Expanding opportunities for current and future workers is essential for ensuring the success of the industry. There are significant disparities in economic security and education levels between production workers and those at higher levels of the agriculture pyramid. Nearly one in five agriculture workers in Pennsylvania is an undocumented immigrant,<sup>18</sup> and many face significant challenges related to economic security and working conditions. According to data from the National Agricultural Workers Survey (2015-16), the average hourly wage from agricultural employment ranges from \$10.60 to \$16.93.<sup>19</sup> While this report focuses primarily on improving formal education opportunities for K-12 and postsecondary students in Pennsylvania who are preparing for careers in the industry, it is important to also consider the education and training needs of the sector's current workforce, including production and farmworkers.

Career pathways have become increasingly popular frameworks for talking about the variety of career options available to individuals preparing to enter the job market or looking for work after an employment dislocation. Career pathways are descriptions of the knowledge, skills and abilities that workers need as they move through the occupations that exist in an industry. They typically have a parallel system of skill acquisition that describes the way the worker can learn

<sup>18</sup> Jeffrey S. Passel and D'Vera Cohn, "Size of U.S. Unauthorized Immigrant Workforce Stable After the Great Recession," Pew Research Center, *Hispanic Trends*, November 3, 2016. <http://www.pewhispanic.org/2016/11/03/occupations-of-unauthorized-immigrant-workers/>.

<sup>19</sup> U.S. Department of Labor, Employment and Training Administration, Office of Policy Development and Research, *Findings from the National Agricultural Workers Survey (NAWS) 2015-2016: A Demographic and Employment Profile of United States Farmworkers*, January 2018. [https://www.doleta.gov/naaws/research/docs/NAWS\\_Research\\_Report\\_13.pdf](https://www.doleta.gov/naaws/research/docs/NAWS_Research_Report_13.pdf)



what is required. They use occupations as a roadmap for jobseekers, and many have been organized in “ladders” or “lattices” showing occupational progression.<sup>20</sup>

The PA Department of Agriculture has identified six career pathways in the agriculture and food industry, including:

1. Farming and Agricultural Operations;
2. Landscaping;
3. Food Manufacturing;
4. Forestry, Lumber, and Wood Products;
5. Conservation and Natural Resources; and
6. Animal Health and Veterinary Services.

These pathways support the roughly 48 in-demand occupations that have been identified, prioritized, and documented.<sup>21</sup> See Appendix D for more information.

## **New and Continuing Initiatives and Recommended Future Program Needs and Interventions**

After due consideration that accounts for its fact-finding and analysis of the state of the agriculture education system and the needs of the workforce of the agriculture and food system, the commission makes the following recommendations for the formal K-12 agricultural education in Pennsylvania.

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<sup>20</sup> WIOA defines a career pathway as “a combination of rigorous and high-quality education, training, and other services that:

- (A) aligns with the skill needs of industries in the economy of the State or regional economy involved;
- (B) prepares an individual to be successful in any of a full range of secondary or postsecondary education options, including registered apprenticeships;
- (C) includes counseling to support an individual in achieving the individual’s education and career goals;
- (D) includes, as appropriate, education offered concurrently with and in the same context as workforce preparation activities and training for a specific occupation or occupational cluster;
- (E) organizes education, training, and other services to meet the particular needs of an individual in a manner that accelerates the educational and career advancement of the individual to the extent practicable;
- (F) enables an individual to attain a secondary school diploma or its recognized equivalent, and at least one recognized postsecondary credential; and
- (G) helps an individual enter or advance within a specific occupation or occupational cluster.” [Section 3(7) of WIOA]

<sup>21</sup> The principal difference between the High-Priority Occupation (HPO) definition used by the PA Department of Labor and Industry and the High-Demand Occupations (HDO) definition used by the PA Department of Agriculture is that the HPO definition requires a base wage whereas the HDO definition does not.

1. Use a set of benchmarked key variables to monitor progress in reaching commission goals.
  - Number of FFA chapters and students
  - Ratio of participants to completers in secondary level, approved ag programs
  - Percentage of students involved in Supervised Agricultural Experiences (SAEs)
  - Economic impact of Supervised Agricultural Experiences (SAEs)
  - Graduates of PA ag teacher training programs who are placed in PA
  - Number of ag and food industry certifications earned by students in the system
2. Continue to support ways to make the system more relevant to the agriculture and food industry
  - a. Use a thorough understanding of the career pathways that the industry uses for occupational advancement to map places for education and training interventions through formal and informal systems.
    - i. Gather information on the Food Manufacturing, Forestry, Natural Resources and Animal Health Services Career Pathways.
    - ii. Continue to update information on the Farming and Agricultural Operations and Horticulture Career Pathways.
    - iii. Support the growth and development of pre-apprenticeships and apprenticeships for Agriculture Operations and Horticulture jobs.
    - iv. Explore the possibility of pre-apprenticeship and apprenticeship options in the other four Career Pathways (Food Manufacturing; Forestry, Lumber, and Wood Products; Conservation and Natural Resources; and Animal Health and Veterinary Services.
    - v. Share this information with other government partners as appropriate.
  - b. Use industry feedback to identify gaps that may exist in curriculum, particularly caused by technology advancement.
    - i. Continue to use industry input to build Task Lists that can be used in the apprenticeship world to compare to similar lists in school-based agriculture education programs.
    - ii. Solicit input from members of Occupational Advisory Committees regarding gaps in curriculum that they identify in the course of their consultation with local programs.
    - iii. Crosswalk industry input to similar Task Lists that are used in career and technical education.

- c. Propose and implement ways to fill the identified gaps through curriculum development, acquirement, and teacher training or retraining as needed.
      - i. Continue to take an active role in curriculum development and acquirement for the gaps in training for agriculture equipment service technicians and the technology transfer of the same to teachers.
      - ii. Explore collaborative projects with Curriculum for Agricultural Science Education (CASE), SUNY Cobleskill, and industry groups such as the Northeast Equipment Dealers Association to transfer technology to broader audiences.
      - iii. Work with the emerging broad coalition of education providers in horticulture and controlled environment agriculture to keep them attuned to the needs of the horticulture industry.
    - d. Review existing national standards and advocate for changes that may be needed
      - i. Explore and advocate for changes that may need to be made in the Agriculture, Food and Natural Resources standards that relate to the gaps that are being identified in school-based agriculture education programming.
    - e. Encourage a voice for the industry at local Occupational Advisory Committee by having the right people present and a process which encourages their input.
      - i. Continue to provide technical assistance to local OACs through the PSU Center for Professional Personnel Development to improve OAC operations.
  - 3. Engage students earlier and more completely in agriculture literacy and education during their academic careers.
    - a. Reach out to the parents of K-8 students as well as the students themselves with information about agriculture and food careers.
      - i. Explore the possibility of deploying the recent social media campaign focused on information on ag and food careers for the parents of K-8 students to other regions and demographics.
      - ii. Demonstrate the use of regional “meet-ups” to provide local ways to reinforce the message of the virtual campaign with career development activities that can be provided as a part of other ag-related community activities.
      - iii. Expand the number of careers on which the campaign focuses.
    - b. Assemble the wealth of curricula around ag literacy, careers and practice, and make it readily accessible to formal and informal educators.

- i. Inventory the breadth of K-8 programming in agriculture and food across the commonwealth in both formal and informal situations.
  - ii. Work with the PA Department of Education to establish a place for ag and food curriculum on the SAS portal that is integrated with PA curriculum standards.
  - iii. Create an Agriculture learning community on SAS to provide a platform for communications among formal and informal educators and interested parties.
- c. Continue to support the Supervised Agriculture Experience (SAE) as one of the three primary parts of agriculture education.
  - i. Support the SAE for All training that is being done by representatives SAE for All Task Force and PSU with the agriculture educators around the commonwealth.
  - ii. Continue to support technical assistance on SAE improvement through the SAE Specialist position supervised by the PSU Center for Professional Personnel Development.
- d. Explore the interface of agriculture and science and the availability of content in that space.
  - i. Participate in the ongoing discussion related to boundary issues between agriculture and science, particularly related to certification.
  - ii. Assess the need of the system as local school programs look at their interface between agriculture and science.
- e. Continue to provide information on ag and food careers to senior high and adult students.
  - i. Explore again better ways to connect with the formal workforce development system in PA.
  - ii. Reach out to the services for veterans, ex-offenders, and special needs people to ascertain opportunities for collaboration.

## **Programming Recommendations for Meeting the Training Needs for Individuals Not Pursuing Formal Post-Secondary Education**

Understanding that agricultural education is not confined to the formal K-12 education system, the commission has also considered the need for adult and continuing education as the agriculture and food industry struggles with worker shortages. It makes the following additional recommendations.

- Continue to explore interfaces with the growing registered apprenticeship system in the United States, negotiating articulations where possible with a broad understanding of career pathways and how they work.
  - Encourage every agriculture-related registered apprenticeship to develop a pre-apprenticeship that reaches into not only the K-12 system but also into other manpower pools (veterans, ex-offenders, unemployed workers).
  - Assist apprenticeship planners in understanding gaps in using agriculture educators as teachers in apprenticeship and plan together to acquire the needed knowledge and skills.
- Explore the extent that the agriculture and food industry uses badges and micro-credentials to train its entering and incumbent workforce.
  - Survey the industry to discover the nature and extent of the use of micro-credentials and certificates.
  - Explore the entities that already exist which provide a repository for micro-credentials and certificated that people earn.
  - Assess the need for such a system for the agriculture and food workforce in Pennsylvania.
- Continue to assess the need for more bi-lingual skill training in the agriculture and food industry.

## **Funding to Support Agricultural Education Activities**

Additionally, the commission recommends that the staff representing the two departments explore ways to address structural issues related to funding and human resource development that have been raised in the course of its fact-finding.

4. Empower local agriculture education teachers, administrators and other leaders in providing agriculture education programs that meet the needs of the industry for workers, the community for future leaders, and citizens who understand the role of agriculture in the food systems.
  - a. Explore ways that local structures may interfere with the ability of local programs to turn participants in agriculture programs into approved school-based agriculture program completers.
  - b. Explore the ways local school districts use the funding that comes from the state for agriculture education programs, particularly how much is used directly for ag ed and how much goes into other programs.
  - c. Study why some districts use other funding streams (such as Perkins) and others don't apply for any funding.



5. Explore the chronic shortage of school-based agriculture education teachers and the prospects for increasing those numbers.

### **Recommendations to the Governor and the General Assembly regarding Legislative or Regulatory Changes to Improve Agricultural Education**

There are no current recommendations that require legislative or regulatory changes to improve agricultural education.

### **Work Plan for 2020-2022**

All of the recommendations and corresponding action plans of the commission that have been enumerated above have been compiled into the Work Plan for the PA Commission for Agricultural Education Excellence which was approved by the commission at its July 14, 2020 meeting after discussion and review at earlier meetings.

The Work Plan is included in Appendix E.

## **Appendix A: Section 1549.1 of the Public School Code of 1949 (24 P.S. § 15-1549.1)**

### **Section 1549.1. Commission for Agricultural Education Excellence.**

(a) There is established a Commission for Agricultural Education Excellence as a departmental administrative commission under the concurrent authority of the Department of Agriculture and the Department of Education with all the powers and duties generally vested in and imposed upon the commissions under the act of April 9, 1929 (P.L.177, No.175), known as "The Administrative Code of 1929."

(b) The commission shall assist in developing a Statewide plan for agricultural education and coordinate the implementation of related agricultural education programming with the Department of Agriculture and the Department of Education.

(c) The commission shall be administratively housed within the Department of Agriculture and shall be staffed and supported by the Department of Agriculture and the Department of Education, as provided under this section.

(d) In order for the commission to fulfill its duties and exercise its authority under this section, an agreement shall be executed between the Department of Agriculture, the Department of Education and the commission, which shall define and delineate the role and responsibility of each agency in assisting the commission in fulfilling its duties under this section.

(e) In order for the commission to fulfill its duties and exercise its authority under this section, the Department of Agriculture, the Department of Education and the commission shall cooperate with each other in the use of staff, land, buildings, quarters, facilities and equipment.

(f) The commission shall consist of the following members:

(1) The Secretary of Education, or a designee.

(2) The Secretary of Agriculture, or a designee.

(3) The following members jointly appointed by the Secretary of Education and the Secretary of Agriculture from lists submitted by the President pro tempore of the Senate and the Speaker of the House of Representatives, in consultation with the Majority Leader and Minority Leader of the Senate and the Majority Leader and Minority Leader of the House of Representatives:

(i) Two farmers.

(ii) A representative of the agricultural processing and agricultural marketing industries.

(iii) Two representatives of agricultural sciences, not more than one of whom shall be a faculty member of the College of Agricultural Sciences of The Pennsylvania State University.

(iv) A representative of the State System of Higher Education with a background in or knowledge of agricultural education.

(v) Two teachers of career and technical agriculture, one from a career and technical

center and one from a school district.

(vi) A representative of a community college with a background in or knowledge of agricultural education.

(vii) An administrator of a school entity which conducts an agricultural education program.

(viii) A member of a school district occupational advisory committee.

(ix) Two members of the business community with knowledge of agricultural education.

(g) To the extent practicable, from members initially appointed, an equal number shall draw lots to serve for a term of three years, for a term of two years and for a term of one year. Thereafter, all members shall be appointed for a term of three years.

(h) The chairmanship of the commission shall rotate on an annual basis between the Secretary of Agriculture and the Secretary of Education, with the Secretary of Education chairing the first annual rotation.

(i) The commission shall keep a record of its official actions and may perform acts and promulgate policies, procedures and guidelines as may be necessary.

(j) A majority of members of the commission shall constitute a quorum.

(k) The members of the commission shall not receive compensation or reimbursement for services.

(l) The commission shall have all the following powers and duties:

(1) Develop a model for Statewide curriculum for agricultural education programs based on high priority occupations.

(2) Consult with the Transfer and Articulation Oversight Committee and school entities to facilitate articulation agreements with postsecondary institutions of higher education.

(3) Provide support and technical assistance to supervised agricultural experience programs based on student needs.

(4) Provide support and coordination for Statewide and local activities related to FFA programs.

(5) Investigate, review and issue an annual report on the status of agricultural education required under subsection (m).

(6) In consultation with and with the approval of the Department of Education, develop guidelines to identify the circumstances when a student who successfully completes an academic course, program or activity for credit may apply the credit toward the completion of an agricultural education program. The guidelines developed under this paragraph shall be posted on the Department of Education's publicly accessible Internet website within fifteen (15) days of approval. The Department of Education shall review the guidelines at least every five (5) years. Any proposed update to the guidelines shall be developed in consultation with the commission.

(m) By May 1, 2018, and by May 1 of each year thereafter, the commission shall submit a report to the Governor and the General Assembly on the status of agricultural education in this

Commonwealth. The report shall:

- (1) Outline agricultural education programs and achievements.
- (2) Assess the trends and needs in secondary and both formal and informal postsecondary agricultural education and training.
- (3) Investigate and assess work force trends of the agriculture and food industry.
- (4) Assess and make programming recommendations for meeting the training needs for individuals not pursuing formal postsecondary education.
- (5) Consider the manner in which funds are used to support agricultural education activities.
- (6) Highlight new initiatives and recommend future program needs.
- (7) Make recommendations to the Governor and the General Assembly regarding legislative or regulatory changes to improve agricultural education.

(n) The Department of Agriculture and the Department of Education shall provide staff to assist the commission with the commission's duties. The Department of Agriculture and the Department of Education shall provide an executive director who shall oversee elementary, secondary, postsecondary and adult agricultural education activities in this Commonwealth and shall serve as the director of outreach for the commission and staff who may be employed on or after the effective date of this section and who shall be assigned within either agency as follows:

(1) A curriculum specialist to assist school entities in developing agricultural education curricula and integrating national agriculture, food and natural resource standards into elementary and secondary curricula.

(2) A program approval specialist to assist school entities with the program approval process for agricultural education established by the Department of Education and serve as a liaison between the Department of Education and school entities for data collection.

(3) An FFA program specialist to oversee State-related FFA activities and implement initiatives for local agricultural education program success.

(4) A work force development specialist to identify career pathways in the agricultural and food industries and promote agriculture and food careers among students and adult job seekers.

(5) An agricultural education support specialist to provide support to the staff of the commission.(o) The implementation of this section shall be subject to funds appropriated by the General Assembly to the Department of Education or the Department of Agriculture, and the funds shall be used to carry out the purposes of this section. The Department of Education and the Department of Agriculture may accept grants and donations from all public and private sources, including the Federal Government, to pay for costs incurred for the implementation and continuance of the provisions of this section.

(p) The following words and phrases when used in this section shall have the meanings given to them in this subsection unless the context clearly indicates otherwise:

"Commission." The Commission for Agricultural Education Excellence established under this section.

"Farmer." A person who engages in activities, practices and procedures to produce and prepare for market poultry, livestock and their products or who engages in the production and harvesting of agricultural, agronomic, horticultural, silvicultural and aquacultural crops and commodities and whose operation is conducted on not less than ten contiguous acres in area or, if less than ten contiguous acres in area, has an anticipated yearly gross income of at least ten thousand dollars (\$10,000).

"FFA." A career and technical student organization that encourages leadership, personal growth and career success through agricultural education.

"School entity." A public school district, intermediate unit or area career and technical school.

## Appendix B: Profiles of Successful Agricultural Education Programs

### Conrad Weiser Area High School

Conrad Weiser Area School District is in Robesonia, PA, in Berks County. The district has a total enrollment of 2,589 students, with 885 high school students. Adam Serfass, John Siefert, and Tabitha Meredith are the district's agriculture educators. Mr. Serfass and Mr. Siefert provide secondary programming, while Ms. Meredith focuses on the earlier grades. The agricultural education program has made the decision not to seek program approval from the PA Department of Education, but has moved the program increasingly toward agricultural science. Each year the district has approximately 20 students complete the program.

In 2018, there were 21 SAE projects with a 23 percent participation rate and a community impact of \$2,927.

Program highlights include:

- 87 SAE projects with 83 percent of those projects having a research base;
- Collaborations with Albright College for advanced study; and
- Strong integration with the high school science department.



At the K-8 level, a full-time agriculture educator works with other teachers to bring agriculture into the science curriculum. The district also has a formal middle school FFA program.

Best practices include: Freedom from program certification allows the program to move more toward science and away from traditional content, SAEs (project-based learning) are integrated into classes where they are monitored and graded every marking period

Challenges: Novel program requires fundraising from the private sector, which adds to teacher workload but builds relationship with the local industry.

### Penn Manor School District

Penn Manor School District is in Millersville, PA, in Lancaster County. The district has a total enrollment of 25,446 students, with 1,634 high school students. Neil Fellenbaum, Diane Glock-Cornman, Jonathan Hess, and Meagan Slates are the district's agriculture educators. In 2018-19, there were 241 students who participated in the agriculture education program. Ten students completed the agricultural curriculum that year.

In 2018, there were 251 SAE projects with a 39 percent participation rate and a community impact of \$209,081.

Program highlights: Five CIPs including Ag Production, Animal Science, Agriculture Mechanics, Applied Horticulture and General Agriculture (environmental and natural resources)

K-8 programming: Ag club in two middle schools

Best practices: Strong Occupational Advisory Committee. Superintendent Michael Lechlitter: “We benefit the community, but the community also helps us through the OAC. The strong support of the business community provides places for students to put education into action.”

Challenges: Many students complete at the local career and technology center in welding, automotive, and building trades, low rate of program completers, encouraging interest in programming among students entering the high school. Principal Baron Jones: “It’s all about relevance to the kids who like the ability to use what they learn immediately.”

## **Selinsgrove Area High School**

Selinsgrove Area School District is in Selinsgrove, PA in Snyder County. The district has a total enrollment of 2,700 students, with 842 high school students. Valerie Fry and Curtis Swineford are the district agriculture educators. The agriculture education program has 220 participants and has approximately five completers each year. About five percent of participants come from farm families.

In 2018, there were 100 SAE projects with participation rate of 55 percent and a community impact of \$28,039.

Program highlights: Ag Foundations, Ag Mechanics, Ag Leadership, Supervised Agriculture Experience (SAE) course, building and construction (framing and masonry), welding, small gas engines, Trout in the Classroom, and Tractor Driving competition

K-8 programming: 3<sup>rd</sup> grade Ag Day, Ag in the Classroom from Snyder County Farm Bureau



Best practices: Strong Occupational Advisory Committee, new push to connect internships with Seal of Employability, use of Perkins funding for equipment and leadership development

Challenges: Many students complete at the local career and technology center in welding and building trades, attracting the interest of kids at earlier age, low rate of program completers, connecting agriculture and STEM, awareness of agriculture jobs and career pathways



## Appendix C: Status of the 2019-2020 Work Plan

Following the guidance from the statute and the recommendations from the 2018 Report, on March 20, 2019, the commission adopted the following Work Plan through June 30, 2020. The commission modified the plan on November 27, 2019.

1. Between January 1 and June 30, 2019, conduct four meetings of the commission to begin a discussion not only of the mandate of the commission but also the important issues related to agriculture education, including but not limited to funding levels from federal, state, and local sources; utilization by local school boards; the development of future agriculture educators; the need for a curriculum development; and the needs of the workforce in the agriculture and food industry. **(Done)**
2. Immediately establish the commission staff at the PA Department of Agriculture with the resources needed to conduct business, including but not limited to office space, laptops, cell phones, business cards, stationary and other office supplies. **(Done)**
3. Immediately develop outreach materials and resources, including but not limited to social media, trade show display, and materials that the commission can use as it develops its identity and communicates its mission with stakeholders and the public. **(In Process)**
4. Immediately research, write, and produce the Report on the Status of Agriculture Education in the Commonwealth of PA by May 1, 2019 as required by the statute. This Report would be done collaboratively with staff from the commission and the Departments of Agriculture and Education contributing and approved by the commission at its March meeting. A similar report would be produced for submission in May 2020. **(Done, In Process)**
5. Immediately, the Executive Director will connect with the PA Department of Education about becoming part of its Transfer and Articulation Oversight Committee, participating in meetings as scheduled. **(Done)**
6. Immediately conduct a pilot project using staff resources to ascertain how people leaving high school FFA programs continue their life experience and their education after graduation. **(In Process)**
7. Immediately collaborate with the workforce development work being done at the PA Department of Agriculture around identifying and promoting career pathways that connect to the agriculture and food industry in Pennsylvania, including but not limited to developing new career pathways, securing recognition in the public workforce system for occupations in the agriculture and food industry, developing and implementing alternatives such as apprenticeship and micro-credentials for skill training after high school, and developing and using channels for communication in getting occupational information related to the agriculture and food industry to a variety of stakeholder audiences. **(Done, In Process)**
8. Immediately connect the work around career pathways to work around career-ready indicators being done by PDE and PAEE. **(Not Done)**

9. Immediately begin working with local school districts to develop agriculture education programs at the elementary and middle school levels with the support of a statewide committee through the PAAE and FFA structure. **(In Process)**
10. Immediately oversee the review and development of new curriculum frameworks for agriculture education programs. **(Ongoing)**
11. Within six months, develop an outreach team staffed by contractors and implement a visitation program to consult with local agriculture education programs to increase preparedness for Act 339 reviews and to improve the quality and contribution of occupational advisory committees (OAC). The team would function at the direction of PDE staff giving priority attention to those programs where concerns are identified. PDE will provide updates to the commission. **(Not Done)**
12. Develop and disseminate tool kits for the use of agriculture educators to increase the number and quality of supervised agriculture experiences (SAE). **(In Process with SAE for All as the new model)**
13. Beginning in July 2019, assess the amount for work being done by the commission staff and plan for other initiatives that address concerns related to issues raised by commission members or that present themselves as a part of the evaluation done for the May 2019 Report. Other issues such as integration with STEM programming, bi-lingual skill training, and others among the recommendations in the June 2018 Report that were not addressed above. **(Ongoing)**

## **Appendix D: In-Demand Occupations in the Agriculture and Food Industry in Pennsylvania**

- Farming and Agricultural Operations
  - Farm Manager
  - First-Line Supervisors of Farming, Fishing, and Forestry Workers/Dairy Herdsman
  - Farm Equipment Mechanics and Service Technicians
  - Agricultural Equipment Operators
  - Farmworkers-Farm, Ranch, and Aquacultural Animals
  - Farmworkers and Laborers-Crop, Nursery, and Greenhouse
- Landscaping
  - First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers
  - Landscaping and Groundskeeping Worker
  - Tree Trimmers and Pruners
- Food Manufacturing
  - General and Operations Managers
  - First-Line Supervisors of Production and Operating Workers
  - Food Batchmakers
  - Packaging Machine Operators
  - Mixing and Blending Machine Operators
  - Food Cooking Machine Operators
  - Cutting and Slicing Machine Operators
  - Bakers
  - Butchers and Meat Cutters
  - Slaughters and Meat Packers
  - Meat, Poultry, and Fish Cutters and Trimmers
  - Packers and Packagers, Hand
  - Helpers-Production
  - Graders and Sorters, Agricultural Products
  - Inspectors, Testers, Samplers, and Weighers
  - Industrial Machinery Mechanics

- General Maintenance and Repair Workers
- Heavy and Tractor Trailer Truck Driver
- Light Truck or Delivery Services Driver
- Driver/Sales Worker
- Forklift Driver
- Cleaners of Vehicles and Equipment
- First-Line Supervisors of Office and Administrative Support Workers
- Stock Clerks and Order Fillers
- Bookkeeping, Accounting, and Auditing Clerks
- Shipping, Receiving, and Traffic Clerks
- Secretaries and Administrative Assistants
- Receptionists and Information Clerks
- Office Clerks
- Forestry, Lumber, and Wood Products
  - Cabinetmakers
  - Woodworking Machine Operators
  - Logging Equipment Operator
  - Paper Goods Machine Operators
  - Sales Representatives, not medical or scientific products
- Conservation and Natural Resources
  - Soil and Water Conservationists
- Animal Health and Veterinary Services
  - Veterinarians
  - Veterinary Technologists and Technicians
  - Veterinary Assistants

## Appendix E: 2020-2022 Commission Work Plan

In early 2019, commission staff were asked by the Secretaries of Agriculture and Education and, subsequently, by the commissioners themselves to consider the recommendations of *PA Agriculture Education: 2017 Report of the Agriculture Education Advisory Committee* released in June 2018 as they developed a Work Plan for the commission (see Appendix A below). Many of these recommendations followed the mandate of the commission as outlined above. The Work Plan was passed by action of the commission on March 20, 2019; updated November 27, 2019; and reviewed by the commission on December 11, 2019.

At its February 19, 2020 meeting, the commission reviewed again the Work Plan for 2018-2020, receiving short briefings on the activities of the staff and commission in fulfilling the current Work Plan. They had considerable discussion on which activities should be continued and what new activities should be added to the 2020-2022 Work Plan. Those recommendations are enumerated below. They take the form of broad goals and more specific action plans that proceed from the goals.

### Recommendations

1. Use a set of benchmarked key variables to monitor progress in reaching commission goals.
  - Percentage increase or decrease in the number of FFA chapters and students
  - Ratio of participants to completers in secondary-level, approved ag programs
  - Percentage of students involved in Supervised Agricultural Experiences (SAEs)
  - Economic impact of Supervised Agricultural Experiences (SAEs)
  - Number of impressions or views of the social media outreach campaign
  - Teacher recruitment, retention, and turnover
  - Number of industry certifications earned by students in the system
2. Identify and explore opportunities to increase diversity of the Agriculture Education system and the various programs and opportunities within it.
  - Conduct an analysis of the system to determine who is being served.
    - Identify groups or individuals not being engaged by the system.
    - Identify ways in which the system and various programs within it can be enhanced to ensure more participation from under-represented groups.
    - Identify programs that have successfully focused on diversity and inclusion and identify best practices.
  - Provide opportunities for continued education focused on diversity and inclusion for commission members and agriculture teachers

- Organize presentations focused on diversity within agriculture for commissioners. Record these presentations and make them available for both schools and teachers.
    - Create a resource guide for teachers and administrators that may have questions or need guidance on issues related to diversity.
  - Explore ways in which FFA can continue reaching students typically under-represented in agriculture programs.
    - Rely on FFA officers for feedback and insight.
  - Expand the recent social media campaign to include stories and testimonials of individuals from diverse groups.
    - Expand the reach of the campaign to ensure it is visible to individuals of various backgrounds.
    - Ensure materials are available for any student with questions or interest in agriculture, including translated versions of documents and alternatives for students who may not have internet access.
  - Explore urban agriculture opportunities and how these opportunities may allow the commission to reach a more diverse audience
    - Increase focus on urban agriculture and identify opportunities to build or expand current programs.
  - Collaborate with workforce and other state programs that focus on serving under-represented populations
    - Identify how the commission can work with these programs to reach more participants.
    - Identify unique funding and training opportunities that may be available.
3. Identify and support strategies to align the agriculture education system with the agriculture and food industry
- Use a thorough understanding of the career pathways that the industry uses for occupational advancement to map places for education and training interventions through formal and informal systems
    - Gather information on the Food Manufacturing, Forestry, Natural Resources, and Animal Health Services Career Pathways
    - Continue to update information on the Farming and Agricultural Operations and Horticulture Career Pathways
    - Support the growth and development of pre-apprenticeships and apprenticeships for Agriculture Operations and Horticulture jobs
    - Explore the possibility of pre-apprenticeship and apprenticeship options in the other four Career Pathways (Food Manufacturing; Forestry, Lumber,

and Wood Products; Conservation and Natural Resources; and Animal Health and Veterinary Services.

- Share this information with other government partners as appropriate.
  - Use industry feedback to identify gaps that may exist in curriculum, particularly caused by technology advancement.
    - Use industry input to build task lists for apprenticeship programs that are comparable to the tasks and curriculum of similar school-based agriculture education programs.
    - Solicit input from members of Occupational Advisory Committees regarding gaps in curriculum they identify during their consultation with local programs.
    - Crosswalk industry input to similar Task Lists that are used in career and technical education.
  - Propose and implement ways to fill the identified gaps through curriculum development and teacher training or retraining as needed.
    - Continue to take an active role in curriculum development to fill the gaps in training for agriculture equipment service technicians and ensure adequate training for teachers in these programs.
    - Explore collaborative projects with Curriculum for Agricultural Science Education (CASE), SUNY Cobleskill, and industry groups such as the Northeast Equipment Dealers Association to transfer technology to broader audiences.
    - Work with the emerging broad coalition of education providers in horticulture and controlled environment agriculture to keep them attuned to the needs of the horticulture industry.
  - Review existing national standards and advocate for changes that may be needed.
    - Explore and advocate for changes that may need to be made in the Agriculture, Food, and Natural Resources standards that relate to the gaps that are being identified in school-based agriculture education programming.
  - Encourage a voice for the industry at local Occupational Advisory Committees by having industry representatives present and a process which encourages their input.
    - Continue to provide technical assistance to local OACs through the PSU Center for Professional Personnel Development to improve OAC operations
4. Engage students earlier and more completely in agriculture literacy and education during their academic careers.



- Reach out to the parents of K-8 students as well as the students themselves with information about agriculture and food careers.
  - Explore the possibility of deploying the recent social media campaign focused on information on ag and food careers for the parents of K-8 students to other regions and demographics.
  - Organize regional “meet-ups” for interested students and their parents to reinforce the message of the virtual campaign with in-person and hands-on career development activities.
  - Expand the number of careers on which the campaign focuses.
- Assemble the wealth of existing curricula around ag literacy, careers, and practice and make it readily accessible to formal and informal educators.
  - Access and inventory the breadth of K-8 programming in agriculture and food across the commonwealth in both formal and informal settings.
  - Work with the PA Department of Education to establish a place for ag and food curricula on the Standards Aligned System (SAS) portal that is integrated with PA curriculum standards.
  - Create an agriculture learning community on SAS to provide a platform for communications among formal and informal educators and interested parties.
- Continue to support the Supervised Agriculture Experience (SAE) as one of the three primary parts of agriculture education.
  - Support the SAE for all training that is being done by representatives of SAE for all Task Force and PSU with the agriculture educators around the commonwealth.
  - Continue to support technical assistance on SAE improvement through the SAE Specialist position supervised by the PSU Center for Professional Personnel Development.
- Explore the interface of agriculture and science and the availability of content in that space.
  - Participate in the ongoing discussion related to boundary issues between agriculture and science, particularly related to certification.
  - Assess the need of local public-school systems as school programs look at their interface between agriculture and science.
- Continue to provide information on ag and food careers to high school and adult students.
  - Explore additional ways to connect with the formal workforce development system in PA.

- Reach out to the services for veterans, ex-offenders, and individuals with special needs to ascertain opportunities for collaboration.
- 5. Empower local agriculture education teachers, administrators and other leaders in providing agriculture education programs that meet the needs of the industry for workers, the community for future leaders, and citizens who understand the role of agriculture in the food systems.
  - Explore how local systems may be preventing participants in agriculture programs from becoming program completers.
  - Explore the ways local school districts use the funding that comes from the state for agriculture education program, particularly how much is used directly for agriculture and how much goes into other programs.
  - Study why some districts use other funding streams (such as Perkins) and others don't apply for any funding.
  - Explore the recent shortage of school-based agriculture education teachers and the prospects for increasing those numbers.