Brains and Braun: ***Pairing Turf Scientists with Turf Managers for a Turf Institute***

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Introduction

The study of turfgrass science holds importance due to the place it has in both our environment and economy. Twenty years ago, the global industry was worth over $90 billion (Chawla et al., 2019) and while the industry grows more and more each year, so too does the pressure it places on our natural resources. By definition, turfgrasses are plants that form a continuous ground cover despite mowing and traffic (Turgeon, 2011). Unlike those maintaining other crops however, turf offers a dynamic blend of recreation and management. There are opportunities for growth and there are challenges. A labor shortage currently exists in the turf industry (Klein, 2021) and numbers are declining in turf programs at the post-secondary level (Richman, 2014; Bigelow, 2016a). A study by Streich (2019) concluded that previous experience on golf courses or playing sports on turf fields may lead to a career in turf, but with so much variance in levels and impact of education and training, the challenge of filling jobs becomes difficult. One method proposed by Streich was to work through routes at the secondary level to expose students to the industry. These routes include coaches and science educators. Interventions like professional development for high school educators to be better prepare students to choose a career in the turf industry will not only reveal opportunities for recruitment but also provide formative feedback so that we can improve the programs (Rennekamp & Arnold, 2009) offered to high school teachers at future professional development institutes. An institute was hosted at Penn State in partnership between the Center for Professional Personnel Development (CPPD) and the Center for Turfgrass Science at Penn State to bring together local professionals who maintain turf for a living with scientists who study all aspects of turfgrass to holistically train secondary educators.

How it works

The goals for the institute were threefold: (a) increase the self-efficacy of educators delivering content related to turfgrass science, (b) increase the confidence of educators to communicate with local turf professionals to facilitate experiential learning opportunities, and (c) expose students to career opportunities in the turf industry. Participants progressed through two days of professional development in turfgrass science on campus at Penn State. The program included tours of: a golf course, a football stadium, a baseball stadium, and a turfgrass research center. The field managers from each site paired with a university faculty member to present a session where participants were able to engage in: discussions on management of the turf, conversations of career opportunities, and even run short form experiments that can be taken back to their institutions. Meetings between each team were held in the months leading up to the institute and during the week prior an on-site visit was conducted to finalize talking points, activities, and logistics for working within the operations that were taking place on the properties. Examples of the activities that were organized and guided by the scientists and managers included sponge absorption to demonstrate absorption and infiltration rates in different turf systems, divot mix preparation, and assembly and customization of a mobile water base with sprinkler head.

Results to Date

Participants (n=10) captured content from the scientific perspective as well as advice on the practical application of the content during the workshops that were led by tandem teams of scientists and managers. Participants also received a large tote of soil samples, equipment to run three different laboratory experiments, a binder with a semester's worth of curriculum and content resources as well as supplemental items like soil probes and fertilizer spreaders. Courtesy of the two title sponsors, participants were able to leave the institute with all of the physical items needed to deliver an effective unit of instruction. In addition to physical items, participants took both a pre and post survey to measure growth in the areas of self-efficacy and awareness in opportunities in turfgrass science. Participant confidence increased significantly as well as self-identified ability to reach out to local turf professionals.

Future Plans

Given the success of the first Institute, a smaller version will be run in Maryland for educators in the fields of applied STEM. Each of the scientists and managers identified tremendous benefit in speaking with and guiding educators through applications of the science behind the management of turf at each location and future work will expand to include extension educators in the teams to better represent diverse perspectives in the field. Challenges resided in articulating the need for hands on work at each location opposed to passive lectures that the educators struggled to engage in. Both future programming and future ideas similar to this type of programming should look at the differences between institutes led strictly by extension educators versus those lead by the teams of research faculty and turf managers, as well as the development of activities that can be completed by educators safely and constructively on-site at turf operations like golf courses and baseball fields. Given the limited scope of the pilot program, future programming will also consider investigation into involvement of students in a concurrently run program for training in turf and the sustainability of exposure to turf topics leading to careers in the turf industry.

Resources Needed

Items	Notes/Description	Unit Cost	Qty.	Total
Participant Toolkits	Honorarium for each of the 2 reviewers of the presentations and curriculum packages.	**$120**	**12**	**$1440**
Transportation	A complimentary digital registration to a future professional learning event	**$550**	**1**	**$550**
Food & Lodging	Appropriate Learning Management System for on-demand and live collaboration	**$175**	**12**	**$2100**
			Total	**$4090**

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