# Get AgSmart: An Evaluation of a Program Building Capacity in Smart Agricultural Technologies for Underserved Communities

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## Introduction and Purpose

The world population continues to increase, yet there is still a need to expand current yields and agriculture capacity while not further taking from current natural resources levels (Godfray et al., 2010). The adoption of smart agricultural approaches is needed to help accomplish such goals to build resilient food systems (Nyasimi et al., 2014). To have these tools used, there is a need to train the current and future agricultural workforce, including many individuals, from farmers to extension personnel. The main goal of this grant project is to develop the capacity in underserved communities of 6-12$^{th}$ grade students and active professionals in smart agricultural technologies. The purpose of the GetAgSmart program is to develop precision agriculture modules (climate-smart practices) for college students who then develop RLO's about these technologies to reach youth and producers. Current students enrolled in agricultural engineering classes at both [1860 land grant] and [1890 land grant] will create videos about smart agriculture technologies that will be redistributed via social media. This research is funded by the Agriculture and Food Research Initiative Competitive Grant Program on Education and Workforce Development, Food and Agricultural Non-formal Education (FANE) by the National Institute for Food and Agriculture.

## Theoretical Frame and Research Procedures

Participatory evaluation was used as theoretical frame for this evaluation research. We wanted to assess the potential success of our program so it could bring about the most positive change within the targeted community (Park & Williams, 1999). This is why participatory evaluation was chosen. This research was conducted as an evaluative needs assessment of a stakeholder meeting. Need assessments are used to describe and systematically review specific social needs (Rossi et al., 2019). This needs assessment was done to understand implications of the project and seek information on social problems of marginalized youth populations interest in agriculture (Rossi et al., 2019). Stakeholders were gathered into three different groups: youth development, university academic staff, faculty and students, and industry professionals. Within these groups facilitators asked open ended questions and recorded the conversations shared on a large notepad for the whole group to witness. These discussions acted as focus groups because of the interactive discussion between stakeholders sharing different views while hearing from others (Merriam & Tisdell, 2016). Each group was asked specific questions related to their role in helping inform how this program's content could be relevant and engaging.

At the same time another facilitator was taking field notes of what was shared by all the stakeholders. Then once each individual focus group was done all the groups came together and shared their answers amongst one another. During this time more discussion and questions were asked about how some groups answered their questions. This provided multiple data points and allowed for the group of researchers to conduct a better needs assessment. All the interviews were analyzed, and different themes were axial coded from the qualitative data obtained (Rossi et al., 2019).

## Results

Results are provided for each stakeholder group with key themes emerging from each group.

**Industry**

From the industry stakeholders' group three themes emerged: what skills were needed, connecting with youth, and connection between producer and consumer. There was emphasis on Climate Smart Agriculture jobs with technology and data-driven approaches and this should include certification processes for some of these technologies. Internships or technology hubs should be created to provide training to youth for these emerging technologies. Lastly this program should provide a greater connection between agriculture and the consumer through various platforms.

**University/Student**

Three themes emerged from this stakeholder group: time when students determine potential careers, skills needed, and program content and delivery methods. Most of the students shared how they started thinking about their career options towards the end of middle school and going into high school. Programs should be catered towards youth at these ages. It was noted how their might be a need for specific skills youth and students to be successful in a stem career field in agriculture. Some of these skills were specific hard skills such as understanding excel, python, while others were soft skills like leadership or communication. Lastly this stakeholder group detailed how the content should be delivered via platforms applicable to the youth. Then expanding past these platforms to in person hands on experiences.

**Youth Development**

Within the youth extension and development group three themes emerged: method and content delivery of RLO's, gaining rapport and interest with youth, and seeing into the future. For content delivery, youth groups like the university group noted how the RLO's might be better as something more relatable to youth, such as short videos or series. These videos should have specific topics but be understandable for all audiences and high-quality and engaging. The videos should help students develop competencies in what specific careers might do as well as helping them develop soft skills and understanding of the world around them. They also mentioned the need of looking towards the future and having clear goals for the program. These goals might include working with schools to create career or educational pipelines or providing content over new technologies and issues arising.

## Recommendations

The first major recommendation that every stakeholder group suggested was to shift from doing a fully reusable learning object or module and instead use short YouTube or social media videos for youth. Within the videos they should include individual representatives acting as youth ambassadors who identify with the youth population the project is trying to target. These videos or short social media reels should include the AgSmart technologies but be engaging enough for youth to learn more about each potential expertise area. Lastly, though this may be outside the project's scope, the principal investigators and project coordinators should indicate clear goals and a future of how this project might grow further in the future. All stakeholder groups indicated that this project should be focused on the future and how it might need to adapt now to meet current impacted needs.

## References

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