



Yuma County Agricultural Interest Survey

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Introduction/Objectives

Yuma County is a major agricultural production center in Arizona. Approximately 180,000 acres are used in agricultural, with most growers producing multiple crops a year on the same land, effectively raising annual production levels to over 230,000 acres. Over 175 different crop types are commercially grown in this region: leafy greens and winter vegetables, durum wheat, sudan grass, alfalfa, date palms, cotton, industrial hemp, and many other crops have a place in Yuma agriculture. The Yuma County Cooperative Extension Department is tasked with providing the diverse local agricultural community with educational resources from the University of Arizona. A survey was circulated to the agricultural community of Yuma County to improve understanding of the educational needs of residents by identifying agrarian topics that are most important to them.

Materials and Methods

A five question survey was used to gather information from individuals regarding: (1) residency and operation locations; (2) roles in agriculture; (3) preferred media sources to receive educational information; (4) educational topics of interest; (5) educational interest for topics in industrial hemp production.

The survey was circulated to the Yuma County agricultural community via email newsletter (343 recipients), at local educational workshops (310 recipients), and door to door to local agricultural businesses (15 recipients). Surveys were disseminated at the following educational workshops: Yuma County Cooperative Extension Citrus Seminar (20 Nov 2019), Yuma Center for Excellence in Desert Agriculture (YCEDA)

Fusarium Wilt of Lettuce Field Day (21 Nov 2019), Yuma County Cooperative Extension End of Year IPM Workshop (10 Dec 2019), and Yuma County Cooperative Extension Industrial Hemp Pre-season Workshop (3 February 2020). Responses were recorded digitally through a Qualtrics software weblink, or via pen and paper for those presented in person.

Respondents were allowed to enter multiple responses to certain questions (1, 2, 3, and 5), if applicable, to capture multiple service areas, multiple roles, etc. To account for the possibility of multiple responses, analysis was adjusted to reflect the proportion of respondents who selected each option. For example, in question 1 “where are you from?” if 100 people took the survey, it would be possible to receive the answer Yuma 100 times and Imperial Valley 100 times, because 100 people could be from both Yuma and Imperial Valley. In this case, both responses would be reported at 100% (summing the responses for each option (100), and dividing by the number of participants (100), rather than by the number of total responses (200). It is important to note that for questions involving multiple answers individual percentage values cannot be added together across responses, as they will produce values higher than 100%, and so must be interpreted individually.

Results

At the time of this publication a total of 150 responses to the survey were received by the Yuma County Agricultural Extension Department and were included in this report.

Where are you from?

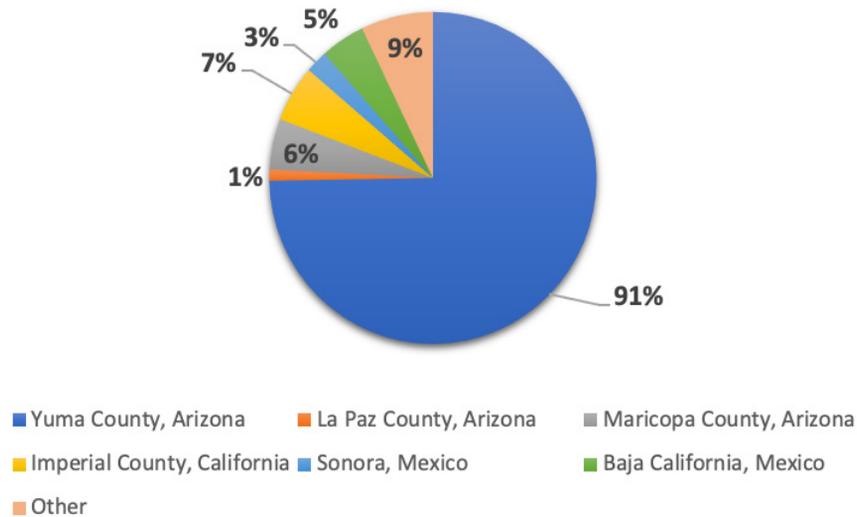


Figure 1. Results from question 1 “Where are you from?”.
 Note: because multiple responses were possible the sum of all responses will be larger than 100%.

Question 1: Where are you from?

Of the 150 survey respondents, 136 people (91%) identified as being from Yuma County, Arizona (Figure 1). To ensure information gathered from this survey reflected educational needs of those from Yuma County alone the non-Yuma participants were dropped from further analysis.

Question 2: What is your role in agriculture?

All participants indicated that they played a role in agriculture, including those that chose write-in responses for

the “other” category. Participants self-identified as having either one, two, or three different roles in agriculture (68%, 22%, and 10%, respectively) (data not shown). A wide range of agricultural roles were reported, the highest amount being comprised of growers (46%), Pest Control Advisors (PCAs) (22%), and members of the Agricultural Chemical industry (16%) (Figure 2). The “other” write-in response category contained various roles such as: student, aerial applicator, agronomist, drone pilot, and master gardener.

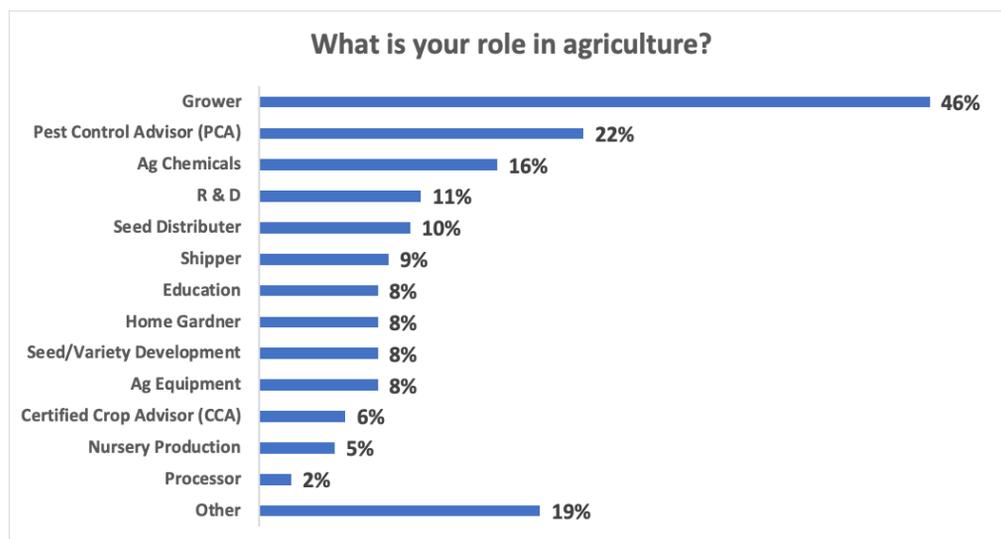


Figure 2. Results from question 2 “What is your role in agriculture”.
 Note: because multiple responses were possible the sum of all responses will be larger than 100%..

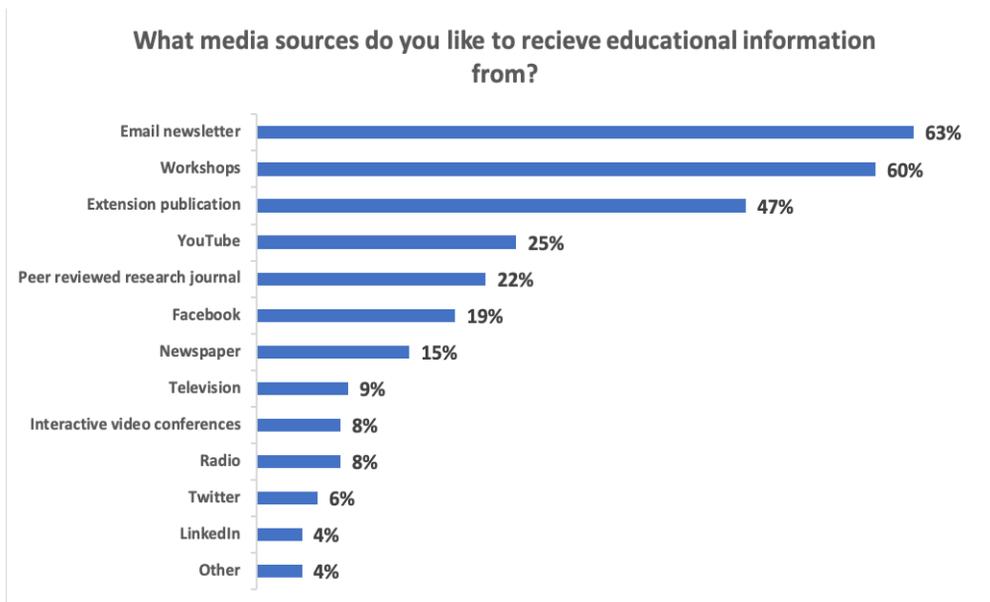


Figure 3. Results from question 3 “what media sources do you like to receive information from?”.
 Note: because multiple responses were possible the sum of all responses will be larger than 100%.

Question 3: What media sources do you like to receive educational information from?

Most participants preferred receiving educational information through four-or-more different types of media sources (43%) (data not shown). The highest rated responses were for email newsletters (63%), workshops (60%), and extension publications (47%) (Figure 3). The “other” write-in response category (4%) listed podcasts and industry publications as educational sources they prefer.

Question 4: What agricultural topics would you like more educational resources provided to you from the Yuma County Cooperative Extension Department?

Participants were presented with a list of specific agricultural topics, and asked if they strongly preferred, slightly preferred, were neutral, or did not prefer more educational resources for them (Figure 4).

The most popular category was lettuce fusarium wilt management, with over half the people strongly preferring more educational resources on how to combat this pathogen.

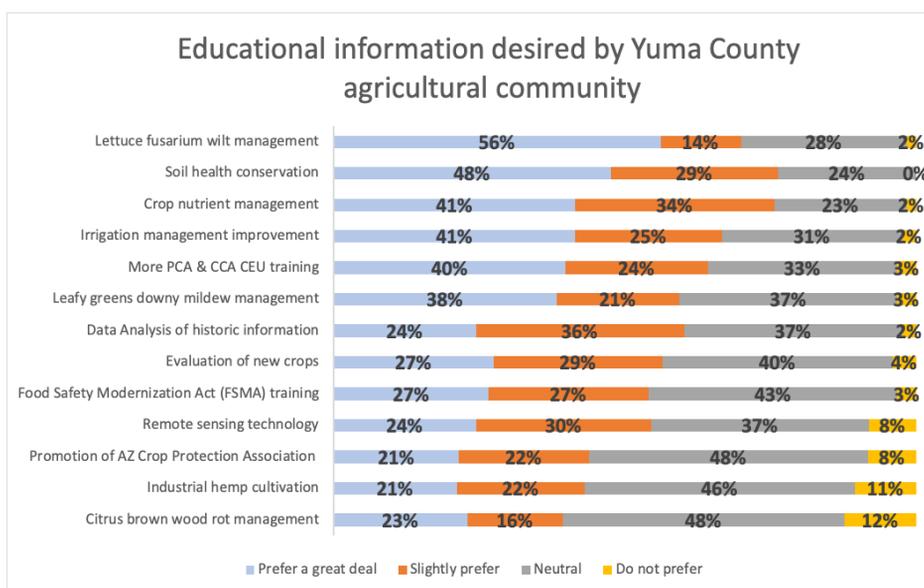


Figure 4. Results from question 4 “What agricultural topics would you like more educational resources provided to you from the Yuma County Cooperative Extension Department?”.

Soil health and soil conservation, crop nutrient management, and providing more pest control advisor (PCA) and certified crop advisor (CCA) continuing education units (CEUs) was also highly desired. The topics that were least favored were industrial hemp cultivation and citrus brown wood rot management.

Results from question 4 (educational topics) were cross tabulated with question 2 (roles in agriculture) to break down educational interests by occupation. Data from the two most prominent groups, growers and PCAs, are shown below in Figures 5 & 6. Growers overwhelmingly preferred educational resources for lettuce fusarium wilt management,

soil health and soil conservation, crop nutrient management, and irrigation improvement efforts. They also showed less interest in citrus brown wood rot treatment, promotion of AZ Crop Protection Association activities, and industrial hemp research than other categories.

PCAs primarily requested more PCA and CCA CEU earning opportunities. Secondly, they desired winter vegetable pathogen education, followed by crop nutrient management, irrigation methods, and promotion of Arizona Crop Protection Association activities. Industrial hemp cultivation was the least favored educational topic.

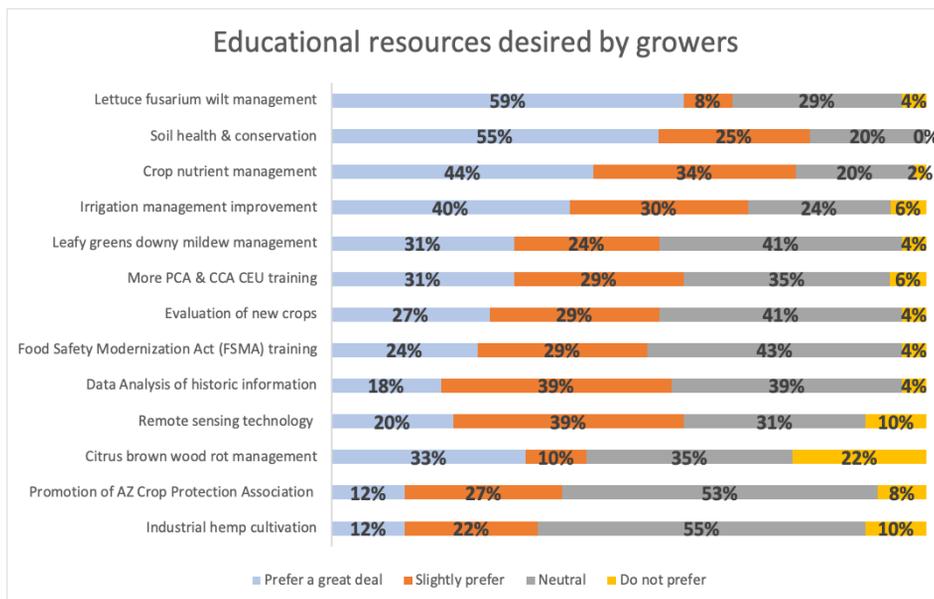


Figure 5. Results from question 4 “What agricultural topics would you like more educational resources provided to you from the Yuma County Cooperative Extension Department?” cross tabulated with “grower” responses from question 2 “What is your role in agriculture?”.

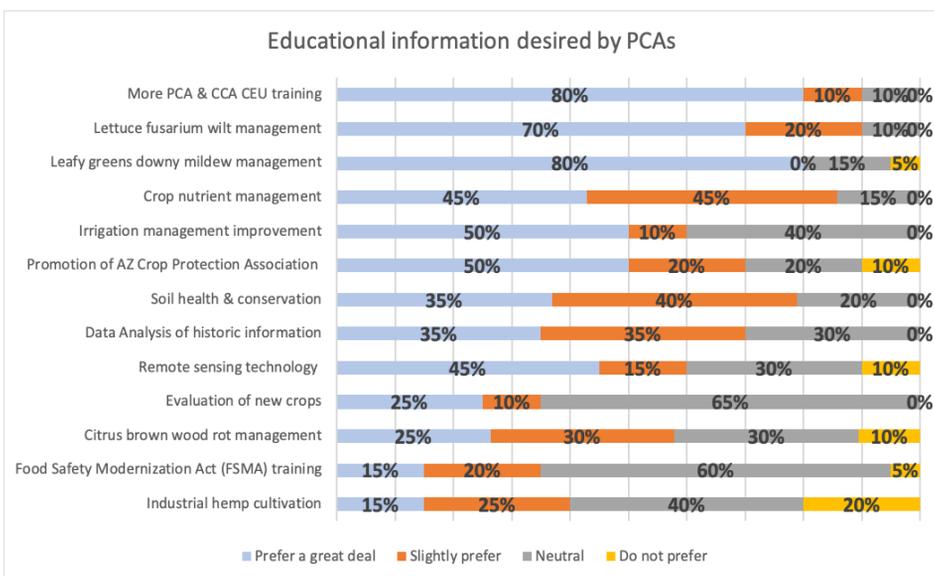


Figure 6. Results from question 4 “What agricultural topics would you like more educational resources provided to you from the Yuma County Cooperative Extension Department?” cross tabulated with “PCA” responses from question 2 “What is your role in agriculture?”.

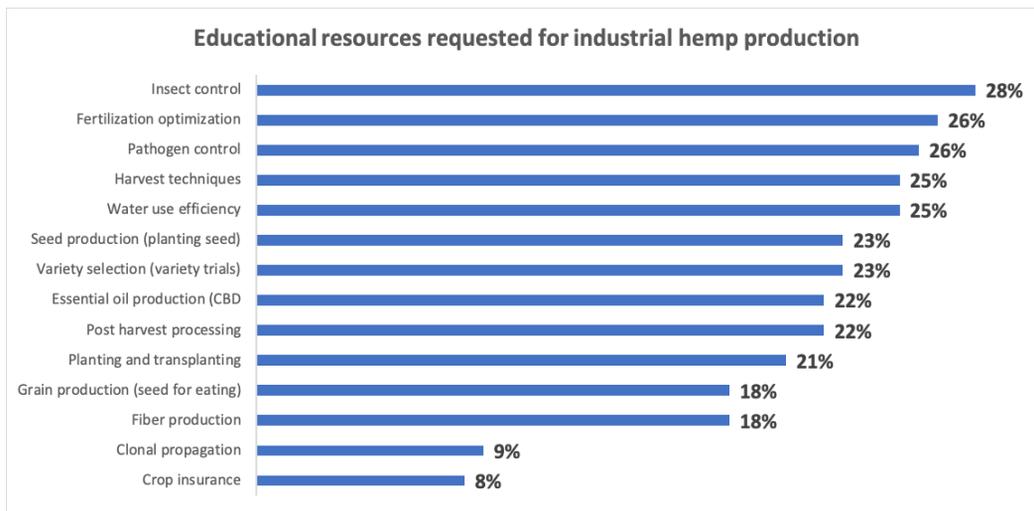


Figure 7. Results from question 5 “what about hemp production would you like to know more about?”. Note that because multiple responses were possible the sum of all responses will produce a value higher than 100%.

Question 5. Which topics of hemp production would you like to know more about?

Of the 136 participants from Yuma County, only 63% submitted answers to this question. Interest levels for each topic were varied across response categories, with most interest placed in pest control of insects (28%) and pathogens (26%), and fertilizer optimization (26%). There was a high interest in learning more about seed, grain, fiber, and CBD production (23%, 18%, 18%, 22%, respectively). Information regarding crop insurance and clonal propagation techniques were the least desired categories for this question (8% and 9%).

Discussion

The purpose of this survey was to assess the educational needs of the agricultural community of Yuma County, Arizona, so that the Yuma County Cooperative Extension Department could customize educational programs to best fit their needs. All participants had a role in agriculture, and after dropping 9% of ballots from people not from Yuma, the survey results represented the thoughts of those from the desired region.

Most participants strongly favored receiving educational information via email newsletters, workshops, and extension publications. These “traditional” methods of sharing information were highly desired and confirm that they should remain a key part of extension activities. However, data for this question may be biased and not reflect the views of the entire community, because the survey was primarily disseminated via email newsletter and workshops; people familiar with receiving email newsletters and attending workshops were exposed to the option of taking the survey more than those who did not use these methods of communication. It is

also worthy of noting that a quarter of respondents desired receiving educational material via YouTube videos, which warrants consideration for future educational activities.

In general, it appears that the community places higher value on educational resources focused on sustainability of established higher revenue agricultural systems (winter vegetable pathogens, soil health, irrigation efficiency, and PCA credits) rather than exploration of new systems (hemp, new crop types, and remote sensing), or finding solutions to problems in established lower revenue crops (citrus brown wood rot). The four highest desired topics of the agricultural community as a whole, and growers in particular, involve soil science to various degrees: lettuce fusarium root rot is a soil borne disease, crop nutrient and irrigation management involves fertilizer and water applications to the soil, and soil health and conservation is by definition soil science. Future educational activities should include soil science topics.

Despite the recent popularity of industrial hemp production in the media, and “gold rush” culture (Niemeyer, 2019), it scored lower than nearly all other categories on this survey. To better understand the cause of its lower ranking it is important to understand the current state of hemp production in Arizona. The first permits to grow hemp commercially in Arizona since it was outlawed with the Marihuana Tax act of 1937, and cultivated for World War II, were issued 31 May 2019 (McGrew, 2020), six months before this survey was circulated. Conversations with people in the hemp industry indicated that the primary hemp derived product produced in Arizona was cannabidiol (CBD) for medicinal purposes.

Since legalization, the CBD market has been in a state of flux, with the crop value steadily declining due to an oversupply of hemp biomass, few CBD extraction facilities, and limited market demand (Laird, 2020); these factors, coupled with unstable dioecious crop genetics (Toth, et al., 2020), poor acclimatization to southern latitudes (industry discussions), and mandatory crop destruction if tetrahydrocannabinol (THC) levels exceed 0.3% (McGrew, 2020), helps to explain the high risks to the grower, which may have influenced the high number of “neutral” and “against” responses seen in this survey.

Even though 37% of participants refused to answer question 5, “what about hemp production would you like to know more about?” the results of those that did respond were quite informative. There was a general desire to learn more about all hemp related topics, more especially disease and insect control, crop nutrition, and seed and CBD production.

There is very little data available as to how insect and pathogens of Arizona interact with hemp, so a high desire for information exists. Also, there are few choices for pesticides that can be used on hemp, as they must conform to Colorado’s approved pesticide list for hemp, which is mainly comprised of pesticides with very soft chemistries (McGrew, 2019). Further research and education should be provided by the Yuma County Cooperative Extension department regarding these issues.

At the time of this publication it is not entirely clear what role industrial hemp will play in the agricultural system of Arizona. It is important that the Yuma County Agricultural Extension department continue research and education programs regarding this crop to allow the community to make well informed decisions about it. However, the Yuma County agricultural community did not value hemp educational information as highly as other topics, so it is important to balance the needs of existing programs with hemp production to match stakeholder demand.

Acknowledgements

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