Hydroponics in jail

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Abstract

According to a study by the Bureau of Justice Statistics, 83% of state prisoners were arrested at least once within nine years following their release. Reducing recidivism rates by providing educational training is one method to reduce the tendency of a criminal to reoffend. Only 7% of local correctional facilities provide vocational training for the incarcerated population. Correctional facilities in urban areas have the capacity to provide vocational training to inmates in urban agricultural techniques. The John E. Polk Correctional Facility in Seminole County, Florida maintains a partnership with University of Florida/ Institute of Food and Agricultural Sciences (UF/ IFAS) Extension to provide vocational training to female inmates in greenhouse production of hydroponic fruits and vegetables. The partnership consists of a 5-day, 26-hour, intensive classroom and hands on training in the hydroponic greenhouse. Since the first pilot program in August of 2017, 117 women have earned a Certificate of Completion in Hydroponic Production of Fruits and Vegetables. End of program evaluations (n= 77) indicate 100% increased knowledge on hydroponic growing, systems, and integrated pest management (IPM), 98% received the Certificate of Completion, and 92% would consider a career working with plants. Participant follow up indicates at least one participant has accepted a job as Assistant Grower, and another participant has started her own microgreens business. Here is a video capturing the program impacts https://www.youtube.com/watch?v=XAR6Jr77p7Q. Deputies provide anecdotal evidence of reduced recidivism saying they do not see the women that participate in the hydroponics program return in as great of frequency as other inmates. Qualitative data indicates that the training program increases morale, boosts self-confidence, and prompts interest in learning. The correctional facility greenhouse sells $9,000 in produce annually to the cafeteria increasing the amount of fresh produce being served to both the deputies and the inmates. Partnering with correctional facilities has beneficial teaching, learning, and revenue enhancing opportunities. The program is on-going with future goals to collect long term data on recidivism rates, while increasing the productivity of the hydroponic greenhouse.

Keywords

recidivism, inmate, corrections, vocational training, greenhouse, horticulture

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INTRODUCTION

The general purpose of corrections and correctional facilities in the United States are for incapacitation, deterrence, and retribution while their role in inmate rehabilitation is contested (Krisberg, 2015). Approximately 2.3 million people are incarcerated in the United States in federal, state, and local facilities and 95% of them will be released at some point, yet 68% will be rearrested within three years of release, 79% within six years, and 83% within nine years post release. The average cost of housing an inmate is $31,286 per year (Carson, 2015).

According to overviews of research comparing studies done by criminologists in the United States and in Canada in the 1980s- 1990s, American studies focused on increases in surveillance and control over offenders, while Canadians studied rehabilitation programs. Evidence suggests that some approaches to rehabilitation are better than others noting vocational programs will probably reduce recidivism (Mackenzie, 2001). According to the National Institute of Justice, persons receiving correctional education have a 12% higher likelihood of getting a job post-release compared to those who did not receive academic or vocational education. Selection bias continues to be a challenge for analyzing the impact of vocational programs. It is difficult to compare the

impacts of the vocational program compared to the motivated individual seeking out a vocational program in the first place.

Vocational training is offered in trade industries such as horticulture. Horticulture is a $10 billion industry in Florida, second only to California, and includes nurseries, landscape businesses, wholesalers, and retailers (Hodges et. al., 2017). Furthermore, the environmental horticulture industry in Florida boasts over 147,000 jobs, many of which require heavy labor and minimal skill. Research indicates that horticultural therapy may have health benefits such as improving cognitive function, and qualitative studies indicate improved sense of purpose and attitude (Holmes and Waliczek, 2019; Tu, 2020). Horticultural vocational training in correctional facilities may offer therapeutic benefits while also increasing employable skills which can reduce the likelihood of recidivating.

Urban agriculture is an emerging form of food production in metropolitan areas. It is estimated that food production will need to increase by 70% to meet the demand of the growing population that is increasingly well to do and located in more urban areas (FAO, 2009). The 2018 Farm Bill recognizes "Urban, indoor, and other emerging agricultural production, creating new programs and authorities and providing additional funding for such operations" (Cowan & Johnson, 2019). Hydroponics is one technique that favors growing high yields in smaller spaces and is especially productive when used with Controlled Environment Agriculture. The high degree of control that is achievable with hydroponics makes it a great technique for growing food and engaging in horticultural training in correctional facilities while maintaining high yields of produce for use in the facility's cafeteria.

MATERIALS AND METHODS

The John E. Polk Correctional Facility is the county jail located in Seminole County, Florida. The facility has maintained a deputy managed greenhouse that is supported by the female inmates for many decades. There have been trainings in horticulture, integrated pest management, aquaponics, and hydroponics through the years, but formal trainings were a thing of the past when the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) Extension Seminole County got involved in 2016. The opportunity was ripe for partnership between the John E. Polk Correctional Facility and UF/IFAS Extension Seminole County with many willing, able, and excited partners.

Limitations were embraced and objectives were established. The major limitations included dedicated instructor time inside the facility and having 15 dedicated female inmates that did not have court or a release date during the training program. The average inmate stay at John E. Polk is about 3 weeks with the maximum stay being 364 days. Based upon the shared objectives and the limitations, John E. Polk Correctional Facility and UF/IFAS Extension Seminole County committed to doing a pilot hydroponic training program to see if it was a good fit. The pilot program was three days with limited hands-on activities. Based upon the evaluations of two, 3-day, pilot programs the UF/IFAS instructor and John E. Polk staff agreed that five days would better serve the trainees. The program was developed into a 26-hour curriculum to 15 female inmates over the course of 5 consecutive days including classroom instruction and hands-on greenhouse "lab" activities for $2,000 per training program.

The program was funded by the money inmates spent on commissary items, a strategy employed by John E. Polk to invest in inmate education. Correctional facilities have unique challenges finding beneficial partnerships with instructors because of factors like insurance for the instructor. Partnering with another government supported agency removes inherent barriers to vocational training in correctional facilities. In addition to the funding and the curriculum, roles and

responsibilities were established, including that a deputy would be with the instructor the entire time inside the jail. It should also be noted that five of the fifteen females demonstrating good behavior and motivation had opportunities to work in the greenhouse beyond the 26-hour class offering. The rotation of greenhouse workers was determined by the deputy and dictated by release dates.

Agenda

The 26-hour, 5-day curriculum included classroom instruction and greenhouse activities to employ techniques and practice using tools of the trade:

- Day One: Introduction to Plant Sciences
- Day Two: Introduction to Hydroponics
- Day Three: Nutrient Management
- Day Four: Integrated Pest Management and Scouting
- Day Five: Harvest Day and Graduation!

Program participants were evaluated by observation, formal evaluation, anecdotal accounts from deputies and voluntary reporting of progress. The program was designed to teach concepts and then reinforce those concepts by practicing them in the real-world greenhouse setting. The concepts practiced hands-on in the greenhouse included preparing, measuring, planting, maintaining, observing, and recordkeeping of microgreens; measuring pH and electrical conductivity using handheld meters and strips; building a personal hydroponic lettuce system and making the nutrient solution from scratch; scouting for biotic and abiotic issues in the greenhouse using sticky cards, loupes, white plates, and collection jars; and harvesting produce using good agricultural practices.

The final day of the program included a lunch together. The program participants enjoyed a fresh greenhouse salad in addition to the usual jail food served, and the instructor enjoyed the exact same meal as her participants, salad and jail food. Formal evaluations were conducted. Finally, the conclusion of the program included a graduation celebration where "Certificates of Completion in Hydroponic Growing of Fruits and Vegetables" were awarded to successful class participants. The certificates and photos were included in a folder for the girls to have upon release.

Federal bonding program

The Federal Bonding Program exists to provide employers with incentives to hire high risk employees such as newly released inmates. It is like an insurance program designed "to reimburse the employer for any loss due to employee theft of money or property with no deductible amount to become the employer's liability" (NIC, 2016). The program involves the inmate volunteering to take the Federal Bonding Program class while incarcerated which provides them with a benefit upon release making the bonded inmates more employable.

The John E. Polk Correction Facility did not offer the Federal Bonding Program to their inmates when UF/IFAS Extension entered into a training partnership. UF/IFAS Extension made the contacts to get the class in the facility through Career Source Central Florida, thus providing inmates in the entire facility, males and females, with a new opportunity to become more employable and less likely to recidivate. The deputy greenhouse manager required that the females who worked with her in the greenhouse beyond the 26-hour class to take the Federal Bonding Program class.

RESULTS

The John E. Polk Correctional Facility Hydroponics Training has awarded 117 "Certificates of Completion in Hydroponic Growing of Fruits and Vegetables" between August of 2017, the first pilot program, and December of 2019, the last training program. Based upon 77 post training evaluations, 100% increased knowledge on hydroponic growing, systems, and integrated pest management, 98% received the Certificate of Completion, and 92% would consider a career working with plants.

Qualitative observations indicated improved attitudes and excitement. The hydroponics class had a long waitlist due to its excellent reputation among the women. Deputies observed that the females that participated in the hydroponics training program were generally positive. At least four program participants demonstrated synthesis and invention of new hydroponic growing system design ideas, an indication of the highest level of inspiration and understanding of concepts. A YouTube video captured the energy of program participants: https://www.youtube.com/watch?v=XAR6Jr77p7Q.

Class comments were numerous and included "best class ever", "now I want to go to school for this", "this is the first time I have finished anything in my life", "thank you for treating us like people", "the instructor and class have inspired me to never give up on my dream of having a greenhouse", and many thanks to the instructor and deputy greenhouse manager.

Two program participants reported getting employment in horticulture. One participant had prior horticulture experience, was reinvigorated, and accepted a job at a prominent local nursery as an assistant grower. Another participant used the class and the time in the correctional facility to plan her own microgreens business. She did start her own business using hydroponic growing for cultivation of microgreens and continues to sell to farmers markets to this day in October 2020.

The John E. Polk Correctional Facility greenhouse grows and sells over $9,000 in produce to the cafeteria which uses food in inmate meals and deputy provisions. The greenhouse program was well-known among correctional facility deputies, thus improving understanding of the connections of food from farm to table.

Working with a vulnerable population is as rewarding as it is challenging, and despite observational data that showed early indications that the girls who participated in the hydroponic program were not recidivating at the same rate as others, observation beyond a year did show that some participants had returned to the facility yet again. What is lesser known is the impact that the program made on a countless number of the women who are difficult to track down post release. What is known is that the women learn to have a greater appreciation of plants. The instructor encourages the women, if nothing else, to find strength in nature.

The benefits of the Federal Bonding Class for inmates is unknown. That was never the purpose of the hydroponics training, however, it is likely that some inmates did benefit from the program offering them "insurance" for new employers willing to hire high risk individuals.

DISCUSSION

Working with vulnerable populations such as inmates has inherent challenges and low rates of success, therefore, any success should be celebrated. There is no doubt that the hydroponics training program is beneficial for inmates' attitudes and experiences, but whether these programs lead to reduced rates of recidivism is unknown. It is difficult to parse out whether successful inmates that do not get re-arrested have better self-motivations which lead to better outcomes independent of the training programs.

Improved data collection in the facility and outside of the facility could improve understanding of outcomes and opportunities to improve. There are many challenges associated with data collection post release. While some inmates may be released under the supervision of a parole officer, others may get booked into another facility to serve another sentence, while others may go to a treatment program, others may go home, and yet others just go homeless. Even if contact information is volunteered by the inmate for follow up, phone numbers, emails, and addresses may not be accurate or up to date.

Leading an inmate training program has allowed for intimate observations of a community that is often shrouded in mystery. The instructor is a horticulturalist and educator, not a mental health counselor; therefore, formal analysis of addiction, state of mind, etcetera was not the objective of the training program, yet one can observe that engaging in horticultural techniques may have therapeutic benefits. While it is unknown exactly how many trainees struggle with addiction, it is clear through conversations with inmates and deputies that substance abuse is a major issue. It is also observed that people survive in a variety of situations and do not have equal access to education or value of learning. The hydroponics class is their first experience where learning is "cool" for many of the participants. Many women mention struggling with anger management issues, too. When in custody, the inmates are generally stable, eat three meals, have a place to sleep, access to basic medical care and mental health treatment, and options to take classes or join support groups. When in custody, the women generally do well, and some have mentioned the hydroponics class being the "highlight of their entire life". It would be prudent to see the impact of vocational training, treatment, and support programs targeted to vulnerable populations prior to an arrest or post release in the form of halfway houses, treatment facilities, and transitional programs focused on reintegration to society.

Many of the women indicate having children. As a result of the hydroponics training program, those trainees who report being in contact with their children tell their kids to pay attention in school, especially science class. In recognizing the challenges for individuals with arrest records and substance abuse issues, perhaps the best outcomes related to vocational training is the impact on the children who watch their mothers struggle and try, and who themselves want something better and try even harder to get out of the cycle of crime. Those impacts are almost impossible to track, but their potential should be noted for future programs with the goal of uplifting the next generation to experience something better by being empowered through education.

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