

# Teaching Methods

## The Effect of Horticultural Community Service Programs on Recidivism

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**ADDITIONAL INDEX WORDS.** horticultural therapy, socio-horticulture, urban horticulture, people-plant interactions, corrections

**SUMMARY.** The average cost of housing a single inmate in the United States is roughly \$31,286 per year, bringing the total average cost states spend on corrections to more than \$50 billion per year. Statistics show 1 in every 34 adults in the United States is under some form of correctional supervision; and after 3 years, more than 4 in 10 prisoners return to custody. The purpose of this study was to determine the availability of opportunities for horticultural community service and whether there were differences in incidences of recurrences of offenses/recidivism of offenders completing community service in horticultural vs. nonhorticultural settings. Data were collected through obtaining offender profile probation revocation reports, agency records, and community service supervision reports for one county in Texas. The sample included both violent and nonviolent and misdemeanor and felony offenders. Offenders who completed their community service in horticultural or nonhorticultural outdoor environments showed lower rates of recidivism compared with offenders who completed their community service in nonhorticultural indoor environments and those who had no community service. Demographic comparisons found no difference in incidence of recidivism in comparisons of offenders based on gender, age, and the environment in which community service was served. In addition, no difference was shown in incidence of recidivism in comparisons based on offenders with misdemeanor vs. felony charges. The results and information gathered support the continued notion that horticultural activities can play an important role in influencing an offender's successful reentry into society.

The United States incarcerates the greatest percentage of its population compared with any

other nation in the world (Schmitt and Warner, 2010). Although the world average rate of incarceration is 166 individuals per 100,000, the U.S. average is 750 per 100,000 (Webb, 2009). The cost of housing a single inmate totals \$31,286 annually (Carson, 2015; DeLisi, 2001), and "federal, state, and local governments spent nearly \$75 billion on corrections, with the large majority [spent] on incarceration" (Schmitt et al., 2010).

Recidivism is the repetition of criminal behavior and reimprisonment (Maltz, 1984), and is one of the

reasons for large inmate populations in the United States. Research tracked a total of 404,638 state prisoners across 30 states from 2005 to 2010 and found 67.8% of prisoners released reoffended within 3 years and 76.6% reoffended within 5 years of being released (Aborn, 2005; Durose et al., 2014). It was also reported that more than 36.8% (one-third) of those who recidivated were arrested within the first 6 months of being released within the 5-year study period (Durose et al., 2014).

Identifying behaviors triggering an offender's likelihood of repeating criminal behavior can lead to potential adjustments in correcting criminal behavior, thus reducing recidivism (Broadhurst and Maller, 1991). Cohen et al. (1991) found lack of education to be a key characteristic when looking at factors that predict recidivism. Research in a study with 3000 offenders across three states found that a continuing education program reduced recidivism and cut incarceration costs by half (Lewin, 2001). Programs that promote drug rehabilitation and family services also are known to play a part in reducing recidivism (Austin and Hardyman, 2004; Inciardi et al., 1997).

Nonviolent offenders make up more than half of those who are serving time behind bars (Schmitt and Warner, 2010). With inflated prison populations, there is a growing interest in alternative means of working with those who commit crimes, especially those who are nonviolent (Mears et al., 2012). The U.S. Bureau of Justice Statistics reported 1 in every 53 adults in the United States were under some form of community service supervision (Kaeble and Bonczar, 2017). Community service is a mandate ordered by the courts to be served outside of jail or prison (Kaeble and Bonczar, 2017), and is generally issued as part of a probation sentence and as a substitution for incarceration (Kaeble and Bonczar, 2017).

As a means of education and vocational rehabilitation, horticulture programs were historically integrated into detention facilities across the United States (Rice and Remy, 1994). Many prisoners have participated in horticultural activities such as harvesting and maintaining their own vegetable gardens as a means of providing food for the institution and

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which can also later be a means of earning income (Lewis, 1996). Even though the work necessary to maintain the garden projects was mandatory and required by the prisons, Pudup (2007) points out the significance of such well-structured horticultural activities, and the huge role they play in influencing a self-regulating and organized lifestyle for the inmates.

A community-based horticultural program called The Green Brigade was designed specifically for the rehabilitation of juvenile offenders (Cammack et al., 2002). Those participating in the program learned vocational skills while also improving their self-esteem, locus of control, interpersonal relationships, and attitudes (Cammack et al., 2002). Another program integrated the Master Gardener curriculum into a prison for adults (Polomski et al., 1997). The Master Gardener program found “offering green-industry job skills, [coupled with] successfully completing the program, offered inmates a sense of academic accomplishment and sparked their interest in horticulture” (Polomski et al., 1997).

Researchers Mohammad and Mohamed (2015) found individuals who engaged in vocational and/or educational programming had lower rates of recidivism compared with those who did not engage or enroll in programming. Participation in vocational and/or educational programs provided inmates the opportunity for learning how to read, write, and develop the skills necessary for a healthy and successful transition back into their communities and society (Mohammad and Mohamed, 2015). The likelihood of a young offender successfully transitioning into a productive member of society on release can be significantly jeopardized if he or she has never experienced any previous form of guidance, vocational development, or taken some form of a reading and writing course (Ameen and Lee, 2012). Therefore, finding a meaningful place within the workforce and community does, in fact, have an effect on an individual’s decision to participate in criminal activity (Petersilia, 2003).

Organized horticultural activities teach new skills that potentially can be applied outside of prison and in reintegrating back into society (Lindemuth, 2011; Migura et al.,

1997). These skills may aid in decreasing the likelihood of reoffending while educating offenders on multiple outlooks and various approaches for analyzing their own personal perceptions of their quality of life (Migura et al., 1997). The purpose of this study was to determine the availability of opportunities for horticultural community service and whether there were differences in incidences of recurrences of offenses/recidivism of offenders completing community service in horticultural vs. nonhorticultural settings.

## Materials and methods

**SAMPLE AND RECIDIVISM DATA.** The institutional review board of Texas State University approved the collection of data for the study. Data were collected through obtaining offender profile probation revocation reports, agency records, and community service supervision reports from the Hays County Probation Office in San Marcos, TX. A total of 20,000 case identification numbers were provided. The official documents presented information on individuals and their alleged and convicted offenses within the county for a span of 57 months (1 Jan. 2007 to 19 Sept. 2012). Personal information regarding the offenders was divided into categories based on gender, ethnicity, age, and degree of offense committed. This sample population included both nonviolent and violent offenders. The information also included number of community service hours completed per offender, per agency, and whether the offender showed any incidence of recidivism.

**COMMUNITY SERVICE SITES AND TYPES OF SERVICE.** The county probation office collected and provided information on the placement and types of activities in which offenders participated during community service. The probation office required consenting community service agencies to provide a complete description of supervised jobs and documentation of whether the offender would be completing technical, general labor, construction, janitorial, semitechnical, grounds maintenance, or clerical work. These reports were evaluated to code each type of service as being horticultural, nonhorticultural indoor, or nonhorticultural outdoor work.

Some offenders included in the sample were not offered the opportunity to complete community service and were coded as “no community service.” Because of legal restrictions, specific offenders were sometimes not given the option to work in some environments or any community service environment given the community service location and/or the assigned tasks required for specific job duties. For example, specific offenders, such as alleged and/or convicted sex offenders, were assigned community service sites solely in compliance with their respective probationary and/or parole guidelines as set by the court (L. Pacheco, personal communication).

**DATA COLLECTION, SORTING, AND ORGANIZATION.** Information gathered from offender revocation reports and agency records were sorted and coded manually into Excel (version 1902; Microsoft, Redmond, WA). From the original sample population of more than 20,000 case identification numbers, 477 individual case numbers were randomly selected. This number was considered suitable to be representative of the overall population given the recommendations by Krejcie and Morgan (1970). To protect offender anonymity, personal information, such as first and last names, was not collected; the information and data points regarding each offender’s case number, gender, ethnicity, age, and degree of offense committed were identified and coded accordingly. The demographic distribution of the sample was compared with and reasonably similar to the overall population of the Hays County community as a whole in terms of age, gender, and ethnicity (U.S. Census Bureau, 2019).

The 477 case numbers were then individually cross referenced with the original database of information using Excel (version 1902) to identify and match for each case the total community service hours completed at a community service agency; the type of community service conducted; and if the community service program was in a horticultural setting, nonhorticultural indoor setting, or nonhorticultural outdoor setting. If the offender did not complete community service, this was subsequently coded as “no community service.”

**DATA ANALYSIS.** Data were analyzed using SPSS (version 2.0; IBM Corp., Armonk, NY). Frequency, descriptive statistics, and Pearson  $\chi^2$  tests were conducted to analyze data and compare the recidivism numbers among those completing horticultural, nonhorticultural, indoor and outdoor community service, and those who did not complete community service. Comparisons also were made to evaluate whether demographic differences to determine if any particular groups responded more to an individual type of community service assignment.

## Results

In investigating the types of community service opportunities available to offenders, it was found in this study and county that there were 52 different agencies available as options for community service during the time of the study. Of the 52 community service agencies, 49% (25) provided horticultural work options, 42% (22) provided nonhorticultural indoor work options, and 9% (5) provided nonhorticultural outdoor work options (Table 1). Examples of horticultural community service included general grounds maintenance activities, such as mowing, weeding, mulching, pruning, raking/sweeping leaves, and picking up trash. Nonhorticultural community service options included indoor work, such as technical, janitorial, semitechnical, and clerical work. Nonhorticultural outdoor community service opportunities included nonskilled construction and general labor, such as litter collection. In classifying sites as horticultural, nonhorticultural indoor, or nonhorticultural outdoor, if the site included any type of horticultural work, among other work, the site was classified as a horticulturally related work environment (Table 1).

**COMPARISONS OF RECIDIVISM AMONG HORTICULTURAL VS. NONHORTICULTURAL SETTINGS.** Comparisons were made to observe differences in recidivism numbers of those offenders assigned horticultural work vs. those assigned other types of community service work, such as nonhorticultural indoor or nonhorticultural outdoor work, and/or those completing no community service. Results of a Pearson  $\chi^2$  test

indicated statistically significant differences in comparisons of the four groups (Table 2).

Frequency statistics showed that any community service performed resulted in less recidivism compared with the group that performed no community service (Table 2). All [(100%) 53] offenders who were not offered the option of community service reoffended. Of the 277 offenders serving community service hours in a horticultural environment, 15 incidents of recidivism were reported, reflecting a 5.4% recidivism rate. Recidivism rates were 14.1% (13) among those who served out their community service hours in nonhorticultural indoor environments. Compared with recidivism rates of those who served their community service in nonhorticultural outdoor environments [9.1% (5)], nonhorticultural indoor community service environments were reported at a 5.0% [14.1% (13)] higher rate (Table 2). Results from the Cammack et al. (2001) study also showed decreasing recidivism rates within the juvenile offender population as a result of being engaged with horticulture.

Previous research suggested horticulture programs were beneficial in rehabilitation and vocational training among the adult prisoner population (Flagler, 1995; Migura et al., 1997; Polomski et al., 1997). Much of the research conducted was with incarcerated individuals, which suggested that, on release, offenders used the vocational skills learned while incarcerated to apply for outside employment, thereby enhancing the abilities of offenders to contribute to the community and be a productive member of society. Perhaps those involved in this study were benefiting in a similar manner from their community service experiences.

**DEMOGRAPHIC COMPARISONS.** Demographic comparisons were made between those serving out community service in nonhorticultural outdoor, nonhorticultural indoor, and horticultural community service work environments. No differences were found in comparisons between gender and age groups (all  $P \leq 0.05$ ). Therefore, male and female individuals and various age groups benefited similarly in terms of reduced recidivism when completing their community service in

horticultural, nonhorticultural indoor, or nonhorticultural outdoor environments. Comparisons were not made among age groups because sample sizes were less than 10 in some cells. Past research indicates there are often differences in incidence of recidivism based on gender, age, or ethnicity. For example, Langan and Levin (2002) found men were 10.8% more likely to be rearrested than women, African American individuals were 10.2% more likely to be rearrested than Caucasians, non-Hispanic individuals were 6.8% more likely to be rearrested than Hispanic individuals, and younger prisoners showed a higher rate of recidivism compared with the older prisoner population. However, in this study, no differences were observed between gender and age groups.

**COMPARISONS BASED ON TYPE OF OFFENSE.** Comparisons found no differences in the numbers of recidivism among individuals who committed felonies compared with individuals who committed misdemeanors among those completing community service in horticultural, nonhorticultural indoor, or nonhorticultural outdoor environments (all  $P \leq 0.05$ ). Therefore, in this study, no particular type of community service was found to benefit high- vs. low-level offenders more in terms of reducing recidivism. However, some studies found evidence that, in general, recidivism was likely to change based on level of offense committed (Council of State Governments Justice Center, 2017; Latessa et al., 2010). Programs directed at the treatment of high-risk offenders showed a much greater impact on reducing recidivism than those directed at low-risk offenders (Council of State Governments Justice Center, 2017; Latessa et al., 2010).

Results of this study found those who completed any type of community service had less incidence of recidivism compared with those completing no community service. Results also found that offenders who completed their community service in horticultural or nonhorticultural outdoor environments showed lower rates of recidivism compared with offenders who completed their community service in nonhorticultural indoor environments and those who had no community service. When possible, community service

**Table 1. Hays County, Texas, community service agencies included in the study, the type of service available at each agency, and how they were coded in the study on the effect of horticultural community service programs on recidivism.**

Community service agency	Type of service provided by agency	Study service code <sup>z</sup>
AE Woods Fish Hatchery	General labor, construction, grounds maintenance	3
All-Texas Athletic Center, Inc.	Semitechnical, janitorial, construction, general labor	1
Always Wanted a Riding Experience (AWARE)	Technical, general labor, construction, janitorial, clerical, semitechnical	1
Capital Area Rural Transportation	Janitorial, grounds maintenance	3
Christian Federation of Police Officers Youth Sports	General labor, grounds maintenance	3
Citizen's Collection Station	Technical, general labor, janitorial, clerical	2
City of Dripping Springs	General labor	2
City of Kyle Parks and Recreation	General labor, construction, janitorial, grounds maintenance	3
City Parks and Recreation	General labor, construction, janitorial, grounds maintenance	3
Combined Community Action Development Services	General labor	2
Dripping Springs Chamber of Commerce	Clerical	2
Dripping Springs Community Library	General labor, clerical	2
Dripping Springs Youth Sports Association	Construction, grounds maintenance	3
Emily Ann Theater	General labor, grounds maintenance	3
First Baptist Church of Noah's Ark	Technical, general labor, construction, janitorial, semitechnical, grounds maintenance, clerical	3
Food Bank	Technical, general labor, clerical	2
Freedom House	Technical, general labor, construction, janitorial, semitechnical, grounds maintenance, clerical	3
Goodwill Industries of Central Texas	General labor, janitorial	2
Grace Food Pantry	General labor, construction, janitorial, grounds maintenance	3
Hays Caldwell Council	Technical, general labor, construction, janitorial, semitechnical, clerical	1
Hays CISD Even Start Program	General labor, janitorial, grounds maintenance	3
Hays County Auditor's Office	Technical, semitechnical, clerical	2
Hays County Civic Center	General labor, janitorial, grounds maintenance	3
Hays County Clerk's Office	Clerical	2
Hays County Community Service and Corrections Department	Janitorial, clerical	2
Hays County Courthouse	Clerical	2
Hays County Human Resources Department	Clerical	2
Hays County Parks and Recreation	General labor, grounds maintenance	3
Hays County Treasurer's Office	Clerical	2
Hays County Women Center	General labor, construction, janitorial, semitechnical, grounds maintenance, clerical	3
Hays Youth Soccer Association	General labor, janitorial, grounds maintenance	3
Human Resources Department	Clerical	2
Kyle Community Library	Clerical	2
Kyle Housing Authority	Technical, general labor, construction, janitorial, semitechnical, grounds maintenance, clerical	3
Kyle Probation Department	General labor, janitorial, grounds maintenance	3
Kyle Parks and Recreation	General labor, janitorial, grounds maintenance	3
Mutt Strutt	General labor, clerical	2
North Hays County Optimist Club	General labor	2
The Public for Animal Welfare Shelter (PAWS) and Humane Society	General labor	2
Redwood Baptist Mission	General labor, grounds maintenance	3
Salvation Army	General labor, clerical	2
San Marcos Animal Shelter	General labor, janitorial, clerical, grounds maintenance	3

(Continued on next page)

Table 1. (Continued) Hays County, Texas, community service agencies included in the study, the type of service available at each agency, and how they were coded in the study on the effect of horticultural community service programs on recidivism.

Community service agency	Type of service provided by agency	Study service code <sup>z</sup>
San Marcos Area Food Bank	Technical, general labor, construction, janitorial, semitechnical, clerical	1
San Marcos CISD	Grounds maintenance	3
San Marcos CISD Transportation	General labor, janitorial	2
San Marcos Housing Authority	Technical, general labor, construction, janitorial, semitechnical, clerical	1
San Marcos Marshall's Office	Technical, general labor, construction, janitorial, semitechnical, grounds maintenance, clerical	3
San Marcos Parks and Recreation	General labor, janitorial, grounds maintenance	3
San Marcos Police Department	Grounds maintenance	3
San Marcos Public Library	General labor, janitorial, clerical	2
San Marcos Senior Citizen's Center	Technical, general labor, construction, janitorial, semitechnical, grounds maintenance, clerical	3
Southside Community Center	Technical, general labor, construction, janitorial, semitechnical, grounds maintenance, clerical	3
Texas Workforce Center	Janitorial	2
Texas State University Horticulture Program	General labor, construction, grounds maintenance	3
The Mitchell Center	Technical, general labor, construction, janitorial, semitechnical, grounds maintenance, clerical	3
U.S. Fish and Wildlife Service	Technical, general labor, janitorial, grounds maintenance	3
Village Store	General labor, janitorial	2
Wimberley Chamber of Commerce	General labor, janitorial, grounds maintenance	3
Wimberley Baseball Little League	General labor, janitorial, grounds maintenance	3
Wimberley Justice of Peace Office	General labor, janitorial, grounds maintenance	3
Wimberley Lions Club	General labor, grounds maintenance, clerical	3
Wimberley Senior Center	General labor, construction, janitorial, grounds maintenance	3
Wimberley Valley Watershed Association	Technical, general labor, construction, janitorial, semitechnical, grounds maintenance, clerical	3
Wimberley Veterans of Foreign Wars Post 3413 and 6441	General labor, janitorial	2

<sup>z</sup>1 = nonhorticultural outdoor, 2 = nonhorticultural indoor, 3 = horticultural work.

Table 2. Chi-square comparisons determining the differences in numbers of recidivism of offenders completing community service in horticultural settings vs. other types of settings in the study on the effect of horticultural community service programs on recidivism.

Community service group and setting	Incidents of recidivism [n (%)]	Mean <sup>z</sup>	SD	df	P
No community service	53.00 (100.00)	1.00	0.000	3	0.000*
Nonhorticultural outdoor	5.00 (9.10)	1.91	0.290		
Nonhorticultural indoor	13.00 (14.10)	1.86	0.350		
Horticultural	15.00 (5.40)	1.95	0.227		

\*Statistically significant at  $P \leq 0.05$ .

<sup>z</sup>The offenders were coded as "1" if they reoffended and "2" if they did not reoffend.

options should be made available to those on probation or parole and include the opportunity for exposure to nature and the outdoors. Past research (Latessa and Lowenkamp, 2005) found within correctional facilities that rates of recidivism were not affected from standard institutionalized punishment alone. However, basic adult education programs were an effective and promising method for lowering rates of recidivism among adult offender

populations (Cecil et al., 2000). Therefore, participating in horticultural programs on being released from prison or while on probation for the continuation of vocational and/or cognitive-behavioral training championed with community service could provide a sense of meaning and purpose to the individual, which could prove helpful for a successful transition back into society. Future studies should investigate further the impact of the role of horticulture in

the results of this study by comparing nonhorticultural outdoor, horticultural outdoor, and horticultural indoor activities as community service options in a similar study on the impact of recidivism.

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