Training Persons with Mental Disabilities as Greenhouse Integrated Pest Management scouts

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Summary. Horticulture businesses will be encouraged to hire qualified individuals with disabilities due to the enactment of the Americans with Disabilities Act of 1990. Maintaining a safe workplace is a considerable challenge due to the use and storage of restricted-use pesticides. In a vocational training program, two persons with mental disabilities were trained to be effective Integrated Pest Management scouts using systematic teaching procedures. Trainees acquired employable skills while providing a service that enabled management to reduce use of conventional pesticides on a greenhouse poinsettia crop by up to 65%.

Greenhouse growers are obligated by federal law to improve safety in the workplace while simultaneously practicing fair employment practices with people with disabilities. Pesticide labeling, applicator certification, and the worker's right to know of hazardous substances have been mandated by legislation designed to reduce exposure of employees to harmful chemicals. This legislation and a reduction in pesticide availability has caused growers to consider alternative pest management techniques. The Americans with Disabilities Act (ADA)

of 1990 outlaws job discrimination against a qualified individual with a disability. Private employers and government agencies can not discriminate in any employment practices, including hiring, training, promoting, and firing. Although 75% of working-aged persons with disabilities want to work, only 34% are working (Harris, 1986). Among individuals who are protected by the ADA are those whose mental retardation or mental illness substantially limits a major life activity, such as speaking, walking, or learning.

In a survey of employers in Virginia's horticultural industry, more than half of the respondents agreed that persons with mental retardation can perform many jobs as well as those who are not disabled. These jobs included tasks involving judgment skills such as harvesting and seedling thinning (Dehart-Bennett and Relf, 1990). Scouting for pests in a greenhouse Integrated Pest Management (EM) program may be viewed as another judgment-oriented task. Scouts must be able to recognize and count a limited number of pests, and to record their observations in a systematic manner.

IPM is a decisionmaking process used to implement pest management procedures on plants. Pesticides are applied as needed to control insects and diseases that exceed a treatment threshold. By improving timing, regular rounds of scouting allow more-effective use of alternative management techniques, including sanitary practices, roguing infested plants, and applying bio-rational pesticides. The IPM approach has been successful in a variety of greenhouse crops (van Lenteren and Woets, 1988).

A process for training persons with mental disabilities to be IPM scouts on greenhouse crops was implemented at the Flower Pot Greenhouse in Richmond, Ind. The Flower Pot was a sheltered work program managed by a private, not-for-profit corporation, Associated Patient Services, Inc. (APS). Located on the grounds of Richmond State Hospital, a regional mental health facility, the greenhouse provided vocational training to improve self-esteem and job skills of its clients.

Persons with mental disabilities can be trained to perform relatively complex tasks through the application of systematic teaching procedures (Connis et al., 1978). The Flower Pot

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used a systematic approach for teaching work skills to more than 50 trainees between 1982 and 1992; the average number employed at one time being seven. Eligible for the program were unemployed people who demonstrated a desire to work and who were diagnosed with developmental disability, traumatic brain injury, chronic mental illness (such as schizophrenia), or a dual diagnosis. Due to the nature of greenhouse tools and chemicals, individuals who had exhibited violent or seriously self-abusive behavior within the 6 months prior to screening were disqualified from entering the program at that time.

Prior to their training, PM scouts were given time to develop horticultural skills and appropriate work behaviors. Special emphasis was placed on punctuality, grooming, cooperation, and courtesy towards co-workers and supervisors. Both quantitative and qualitative measures of behavioral progress and productivity were recorded daily. Instruction began by explaining the rationale for learning a particular skill. Next, the skill was described and demonstrated, usually having been broken down into component tasks. For transplanting, these included removing a seedling from a propagation tray, placing it in the center of a flower pot, filling-in around the roots with potting mix, and watering the mix. During the demonstration, the supervisor also modeled appropriate behaviors such as attentiveness and orderliness. Trainees then were asked to perform the tasks under direct supervision. As they practiced the skill, feedback was given to the trainees on their performance. Appropriate behaviors were maintained using verbal prompts and praises from the supervisor. The finished product, such as a finished transplanted seedling, was made by the supervisor during the demonstration and left with the trainees as a visual cue. This allowed trainees to make comparisons with their own completed product.

Particular encouragement was given to those who could continue performing the tasks without direct supervision. Disciplinary action included private verbal reprimands. If the inappropriate behavior was extreme or persistent, supervisors would remove the client from the task site for several minutes. The isolation from fellow workers extinguished any atten-

tion they were receiving for the negative behavior. Individual vocational plans addressed behavioral and productivity goals of each trainee in a positively stated, sequential manner (Table 1). Evaluation of a trainee's progress towards individual vocational goals was conducted after their initial 6 weeks in the program, and quarterly thereafter by the case coordinator, greenhouse staff, and division director of APS. Daily or weekly progress was evaluated by the greenhouse supervisors and expressed to the individual in a positive manner.

After initial training, work skills emphasized greenhouse tasks of watering, weeding, seeding, planting, and spacing pots on the growing bench. Advanced skills included operating greenhouse machinery and interviewing for jobs. From those individuals completing the training and acquiring advanced skills, two workers were chosen in 1990 to be pest scouts for the greenhouse's newly implemented IPM program.

The training process of scouting was extended deliberately over a per-

iod of several weeks, as it was more complex than other tasks they had learned. The process began with a supervisor explaining the rationale for managing pests with IPM. Examples of poinsettia pests were shown either directly or with illustrations. A hand lens, identification manuals, clipboard, and weekly scouting report forms were provided to the two scouts. Finding and identifying pests on sticky traps in the greenhouse was demonstrated. The following week, trainees were prompted on techniques, and then allowed to scout. A supervisor remained near to answer questions. They were expected to count accurately adult and immature whiteflies, and the adult forms of fungus gnats, thrips, and aphids. They also were expected to evaluate the status of weed growth in and around the greenhouse. Eliminating weeds reduced the buildup of insect pests in concealed areas below benches. From the report forms, management could make decisions for or against pest management action.

A three-number system, based on growing bench, row, and pot location,

Table 1. *Sample individual vocational plan, APS Industries, Inc.*

Client: John Jones

Effective Date: From May 15, 1993 To November 14, 1994

Long Range Goal:

To improve appropriate work behaviors by reducing incidence of self-talk from 15 occurrences an hour to 2 occurrences an hour.

Baseline:

John recently self-monitored incidences when he heard himself talking to himself while working in the greenhouse. He recorded each incidence with a hash-mark in a pocket notebook. The average number of occurrences was 15/hour.

Objectives:

Given the opportunity to self-monitor while working independently, John will reduce incidences of self-talk to 12/hour by June 30 (six weeks).

Given the opportunity to self-monitor while working independently, John will reduce incidences of self-talk to 9/hour by August 15 (twelve weeks).

Given the opportunity to self-monitor while working independently, John will reduce incidences of self-talk to 6/hour by October 1 (eighteen weeks).

Given the opportunity to self-monitor while working independently, John will reduce incidences of self-talk to 2/hour by Nov. 14 (six months).

Greenhouse staff will give positive reinforcement by verbally praising John as he reaches each objective. Greenhouse staff will monitor John's self-talk at least one time per six weeks to check the accuracy of his self-monitoring, and verbally praise him if his accuracy is within 80%.

Case Coordinator: _____ **Date:** ____/____/____

I have received a copy of "Notice of Parent/Client Rights" and APS Appeals and Grievance Procedure. I agree to participate in the activities of this program. I have received a copy of the Individual Vocational Plan.

Client: _____ **Date:** ____/____/____

The following person/persons have registered a dissenting opinion. A record of this is attached to this Case Conference Report.

Date ____/____/____

Date ____/____/____

was used to identify all poinsettias in the greenhouse. Pest problems on individual plants were monitored from week to week. Also, using this system, plants could be chosen at random for sampling for more-objective scouting.

The diagnosis of disease is difficult, so the trainees recorded symptoms or signs of disease on the same report form, using the number system. Then they were instructed to notify the supervisor immediately. Each week, the trainees were reminded of what the normal appearance of the plant should be at the given stage of development. Some of the abnormalities they were trained to recognize included wilting, stunting, spotting, streaking, and the formation of lesions on stem or leaves.

Trainees first were taught how to distinguish between insect damage, a disease problem, and particles or residues of potting mix on leaves. Then they used insect color to distinguish between whiteflies, aphids, and other flies. Supervisors gave trainees three, 2.75-h periods of directly supervised scouting time to master identification of these insects. This included checking trainee accuracy three times each hour. Additional instruction was required for them to distinguish between an adult fungus gnat and shore fly. To ensure that they learned how to identify different pests accurately, the importance of the skill was emphasized. Trainees understood that management between these similar forms of insects was quite different. This additional instruction required another three, 2.75-h sessions. Total training time was 16.5 h. Both scouts were trained simultaneously.

Training then moved into a self-instructional stage, considered by management to be an on-going process. After learning the basics of plant inspection and insect identification, trainees needed only limited supervision. They used their insect manuals and other reference books to hone their skills of identification. The two trainees often were observed discussing a question between themselves before bringing it to their supervisors. This is

an important step, because concepts discussed among learners are retained twice as well as concepts they only hear and see (Barth, 1984). Upon submitting their reports each week, supervisors engaged trainees in discussing the week's observations. Sessions were structured to reinforce learned activity in the form of prompts and praises (Connis et al., 1978).

Results were favorable during the 2 years of using these two individuals as scouts. Flower Pot managers achieved their objective of reducing conventional pesticide use without compromising plant quality—the goal of their IPM program (Eddy, 1992). During the first 2 years of the program, conventional pesticide use was reduced 65%. Improved plant quality allowed the inflation-adjusted retail price to increase \$0.75 each year. Both trainees improved their productivity ratings and learned a skill that could improve their marketability in the working community. The two trainees learned to perform all the IPM tasks without direct supervision after six, 2.75-h training sessions. The total training period did not seem excessive to management. This experience is consistent with a national survey of managers that showed that 75% believe the cost of employing a person with disabilities is not excessive (Harris, 1986). Without other IPM programs in Indiana greenhouses, it is difficult to compare this program with other training programs. However, productivity ratings of these two individuals for other judgment-oriented, tasks such as determining watering needs and applying water to plants, was normally 7% to 95% of the productivity of their supervisors.

This experience at the Flower Pot suggests that individuals with mental disabilities can be trained to perform the judgment-oriented tasks of greenhouse pest scouting. The process of training involved providing rationale, giving demonstrations, giving feedback, and providing the means for self-instruction. In the proper environment, individuals with disabilities could

be considered as qualified for greenhouse scouting positions under ADA. Including these individuals in their work force could help horticulture employers comply with ADA regulations and adopt an integrated pest management strategy.

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