

# Golf Courses in California As Modern Agricultural Enterprises

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Golf courses are producing a “high value agricultural crop” as the economic benefits per acre are higher than for most crops. The consumption activities related to golf generates \$1.15 of value added for every dollar of revenue generated in the golf course.

The definition of agriculture changes over time. Agriculture is the cultivation of plants and husbandry of animals, that is, the management of living things and ecosystems to produce goods and services for people. Maintenance of a golf course entails intensive cultivation of turfgrasses and other plants to enable consumers to play and practice golf. Under this, golf course maintenance is part of agriculture and golf courses are types of modern agricultural enterprises. Food, fiber, fodder, and fuel are well-recognized agricultural goods, but fun, or an outdoor venue for it, is not well-recognized as an agricultural service.

At golf course facilities, people also can play other sports, eat or dine, sleep, and participate in other social activities. Thus, facilities with golf courses are multi-output, agriculturally-based recreational businesses that share much in common with other multi-output, agri-tourist businesses: wineries, restaurants operated by farmers, dude ranches, and bed-and-breakfast inns on traditional farms.

Golf courses and similar agribusinesses have to be included in policy discussions about resource allocation for agriculture and rural development.

In this article, we present an overview of golf course facilities in California based on relatively new information about water use for conventional agriculture in the state and recently revised results of surveys done in 2001 and 2002. We first describe the distribution of types of golf course facilities. Second, we discuss the chief output of a golf course facility and present information about revenues that facilities earn for supplying landscapes to play and practice golf. Third, we assess input use and compare revenues generated per acre of land and acre-foot of water on golf courses to other agricultural industries. We conclude by underscoring the importance of a broad, inclusive view of agriculture.

## Golf Course Facilities in California

The golf course industry caters to many types of golfers whose income and patterns of play vary. The industry is a source of export revenue for the state because it attracts tourists but also provides recreation to local citizens. A diversity of golf course facilities reflects the diversity of market segments served by the industry. California had 891 facilities with golf courses that were open for play as of January 1, 2001. In terms of the number and length of holes, 55.4% of all facilities had one 18-hole regulation course. The second, third, and fourth most prevalent types had 9 holes that constituted a regulation course (11.1%), an executive course (8.5%), and a par-3 course (6.1%). Facilities with two 18-hole regulation courses and one 27-hole regulation course accounted for 5.0% and 3.6% of

the total, respectively. Facilities with one 18-hole executive course and one 18-hole par-3 course represented 4.4% and 1.5% of all facilities, respectively.

In terms of access to courses and ownership, public facilities accounted for 62% of all of California’s facilities in 2000. In particular, facilities with nothing but daily-fee courses and those with only municipal courses represented 41% and 21% of all facilities, respectively. Clubs with private golf courses accounted for 31% of all facilities: 20% were equity clubs and 11% were non-equity clubs. Facilities with only resort courses accounted for 6% of the total. The remaining five facilities had combinations of private non-equity and resort courses, daily-fee and resort courses, and private non-equity and daily-fee courses.

The distribution is even more complex if one classifies golf course facilities jointly by the number of holes, the length of the course, and the access and ownership. In this case, the most common type of facility had one 18-hole regulation, private course; 22.4% were this type. The second most common type, 19.4% of all facilities, had one 18-hole regulation, daily-fee course. The third most common type, 10.9% of all facilities, had one 18-hole regulation municipal course. Facilities with one 9-hole regulation, daily fee course accounted for 6.7% of all and were the fourth most common. The fifth most common, 4.7% of facilities, had one 9-hole executive, daily-fee course.

Following procedures of Dillman, we conducted a survey of the state’s 891 golf-course facilities in 2001 and 2002. The survey response was 21%; managers or superintendents of 187 facilities returned surveys with usable answers to our questions. Private, municipal,

daily-fee, and resort facilities with an 18-hole regulation course accounted for 26.2%, 18.2%, 15.0%, and 1.6% of respondents, respectively. Non-resort facilities with a 9-hole non-regulation course and those with a 9-hole regulation course represented 10.7% and 9.6% of respondents. Non-resort facilities with 36 holes, 27 holes, and 18 non-regulation holes accounted for 8.0%, 5.3%, and 4.3% of respondents, respectively. The response rate to a similar survey was 17% in Florida.

### Revenues from Golf Facilities

People spent \$4.414 billion in total at California's golf course facilities in 2000. The most important product of a golf-course facility is a round of golf. Golfers in 2000 played 41.1 million 18-hole-equivalent paid rounds in California. They paid \$1.668 billion in golf membership dues, green fees, golf car fees, advanced booking fees, tournament fees, and miscellaneous charges to use California's golf courses in 2000. Payments for rent of golf cars, pull carts, and caddy services, as well as payments of trail fees for annual use of personal golf carts, were \$235 million of this total. In addition to \$1.668 billion, golfers also paid \$76.9 million in ball-bucket charges and fees to practice at on-site driving ranges. In total, people paid \$1.745 billion in 2000 to play and practice golf at the state's golf course facilities. This amount represented only 40% of the total receipts of golf course facilities in the state.

Other expenditures at golf course facilities included \$980 million for food and beverages, \$825 million for lodging, \$252 million for merchandise from on-site golf shops, and \$85.0 million for clubhouse rental.

Direct, indirect, and induced sales generated \$4.631 billion in personal income and \$1.396 billion in taxes in 2000. Direct sales supported 63,055 jobs and, through indirect and induced sales impacts, an additional

40,405 jobs. The total value added by the facilities was \$5.081 billion and accounted for 0.39% of the California's gross state product in 2000.

### Golf Course Maintenance as Farm Work

Golf course superintendents and their staff manage turfgrasses, trees, and other plants in precise configurations to maintain courses, practice greens, and driving ranges. These landscapes provide venues to play and practice golf. Superintendents and their staff also manage water bodies, clubhouse grounds, and other landscapes around the facility to enhance golfing, dining, lodging, shopping for golf-related merchandise, and other recreational activities. They spent a total of \$821.5 million in 2000 for agricultural management of golf courses, driving ranges, and other landscapes at the facilities in California.

The largest part of this expense was \$686.6 million to maintain and improve golf courses and other landscapes around the facilities. This estimate covers wages and salaries, purchases of plant materials, pest management costs, fertilizer expenses, water charges, minor repairs of equipment, and any other expense for the care of trees, shrubs, grass, other plants, and water features on grounds around the facility. Capital expenditures on major equipment for golf course maintenance, installation of new irrigation systems, renovation of a significant planted area, and other landscape improvements constituted the remainder of the \$821.5 million.

Maintenance and improvement of the landscapes at a golf course facility entail numerous jobs, some of which are highly skilled and require periodic certification. These positions include golf course superintendent, assistant superintendent(s), head mechanic, assistant mechanic(s), foreman or forewoman, spray technician(s), head gardener,

gardener(s), irrigation specialist(s), and grounds crews. In total, superintendents and their staffs worked the equivalent of 13,841 full-time jobs to care for golf landscapes in 2000.

### Use of Land and Water

California's golf course facilities in 2000 covered 137,297 acres. The area includes golf courses—tees, fairways, greens, roughs, sand bunkers, water bodies, and paved cart paths—practice greens, driving ranges, clubhouse grounds, undeveloped land, parking lots, surfaces of clubhouses, tennis courts and swimming pools, and other hardscape. Golf course landscapes exclude all impervious surfaces except cart paths. They occupied 120,907 acres and consist of golf courses, practice areas, clubhouse grounds, and undeveloped land. Superintendents used 340,406 acre-feet of water to irrigate 88,738 acres of golf courses, driving ranges, practice greens, and lawns around clubhouses in 2000.

### Comparisons to Traditional Agriculture

Table 1 presents a comparison of resource use measured by revenue per acre of land and acre-foot of water among various agricultural commodities and golf courses. The results demonstrate the high variability in terms of revenue yield per acre between different crops. Field crops like grains and rice produced much less than a \$1000 per acre in 2000 and less than \$100 per acre-foot of water, while fresh tomatoes and some truck crops generated close to \$10,000 per acre and more than \$2000 per acre-foot of water. Table 1 shows expenditures to play and practice golf at golf course facilities were 8.8% of \$19.904 billion, the farm-gate value in 2000 of all conventional agricultural commodities except apiary, dairy, livestock, and poultry products. The land area and water use on golf course landscapes were 1.4% of the

8.793 million acres of harvested land and 1.1% of the estimated 30.881 million acre-feet of water that growers used in 2000 to produce these conventional agricultural commodities.

Revenues were, on average, \$14,431 per acre of land and \$5,126 per acre-foot of water at golf courses, but only \$2,264 per acre of land and \$645 per acre-foot of water at conventional farms. Thus, revenues per acre of land and per acre-foot of applied water were, on average, 6.4 and 8.0 times larger at golf courses than conventional commodity farms, respectively. Revenues per acre of land and acre-foot of water were lower at golf courses than at conventional farms only for a few agricultural commodities, such as strawberries, flowers, and nursery products.

Because of the high value added of water for turfgrasses, golf courses in California were among the first to introduce modern irrigation practices, such as irrigation scheduling. Much of the lessons learned on golf courses were utilized to improve the technology and make it more affordable for low-value crops.

## Conclusion

A broad perspective on the agricultural sector is crucial for effective management of California resources. Turfgrass and other plants on golf courses are one of California's highest-value commodities in terms of either revenues per acre of land or acre-foot of water. As governments establish principles to allocate water and land resources among various activities, golf courses should be allowed to compete. Allocation of water away from low-value uses to golf course maintenance and other high-value uses could enable those who gain the water to compensate those who sacrifice their losses, and still be better off than they would have been without the reallocation.

Establishment of water trading could enable people to voluntarily make

Table 1. Comparison of Revenues and Revenues Per Unit Land and Water for Agricultural Commodities and Golf Courses, 2000

Agricultural commodity	Revenues (product value) \$1,000	Revenues per unit of water \$/acre-foot	Revenues per unit of land \$/acre
Grains	113,612	79	204
Rice	231,001	72	422
Cotton and cottonseed	1,025,523	367	1,122
Sugar beets	111,835	309	1,196
Corn	157,985	89	610
Beans, dry	56,700	205	506
Tomatoes, processing	617,190	742	2,277
Tomatoes, fresh market	333,840	2,840	7,800
Cucurbits	482,549	1,535	4,096
Garlic and onions	443,047	1,711	5,001
Potatoes	271,613	2,479	5,154
Other truck crops	8,607,152	5,724	9,429
Almonds and pistachios	919,789	376	1,601
Other deciduous nuts and fruits	1,308,940	571	2,294
Subtropical crops	1,103,130	752	2,948
Grapes, all	2,836,313	1,661	3,430
Alfalfa and other sources of hay	730,422	127	477
Safflower and other field crops	552,892	131	584
All crops	19,903,533	645	2,264
Golf courses	1,744,839	5,126	14,431

*Source: Source: Hawkins, Tom. 2009. Agricultural Water Use Collection Program. Department of Water Resources, State of California, Sacramento SC, June 9.*

these reallocations. As producers of a high-value commodity, golf course superintendents would buy water from farmers of low-value crops. Similarly, future expansion of the golf sector as population ages globally may be an opportunity to increase value added derived from California's resources.

Einstein observed, "The significant problems we face cannot be solved at the same level of thinking we were at when we created them." The conflicts about water use and the challenges of rural development in California cannot be met if agriculture is only viewed as the production of food, fiber, and fodder. In recent years, policymakers and businesses have recognized potential economic contributions of agricultural production for fuel. Golf courses and other enterprises that supply venues for

recreation can also add significant value to rural and other economies.

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