

Virginia's Turfgrass Industry

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SUMMARY

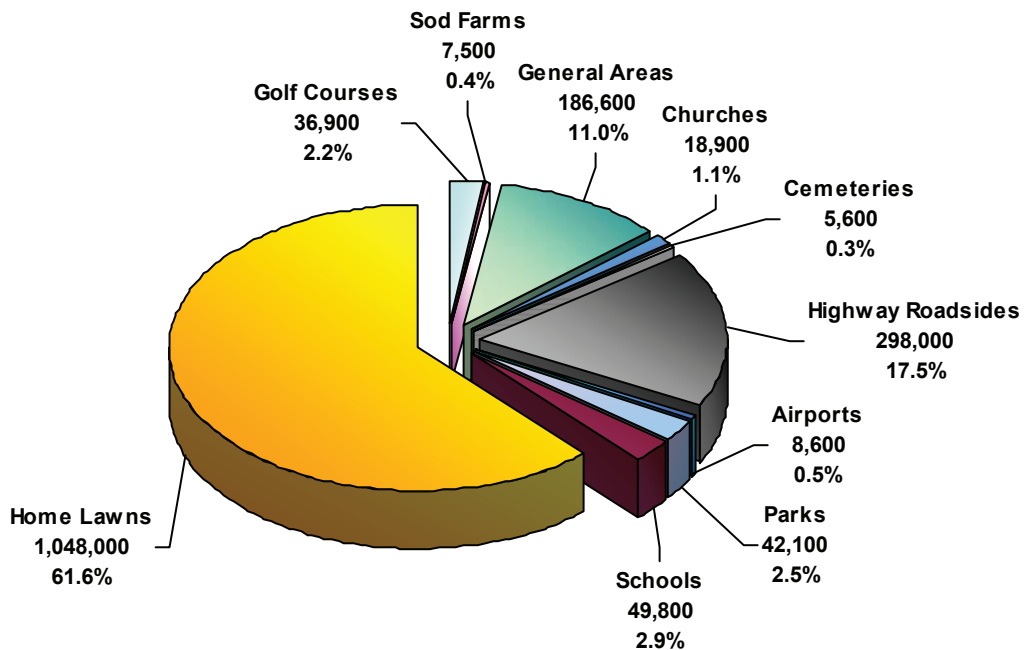
General Statistics

An estimated 1,702,000 acres of turf was maintained in Virginia in 2004 compared to 1,368,200 acres in 1998, the last time the survey was conducted. Turfgrass acreage, production, and maintenance expenses were measured for 11 distinct sectors; golf courses, sod farms, churches, licensed cemeteries, highway roadsides, airports, parks, schools, home lawns, lawn service companies and general areas. Home lawns, general areas, and highway roadsides accounted for 90 percent of total acreage. There were 424,225 paid workers employed in Virginia to maintain turf, nearly an 8 percent increase from 1998. A total of \$5.02 billion worth of turf equipment was owned or leased in 2004, up nearly 70 percent from 1998.

Sector	Number of Turf Acres		Number of Paid Workers		New Turf Acres Established		Cost of Establishing New Turf		Value of Turf Equipment	
	1998	2004	1998	2004	1998	2004	1998	2004	1998	2004
Golf Courses ⁴	33,600	36,900	3,700	4,100	1,600	680	\$39,410,000	\$7,979,000	\$140,129,000	\$189,751,000
Sod Farms	4,800	7,500	200	180	600	600	\$1,208,000	\$781,000	\$13,014,000	\$43,570,000
General Areas	215,000	186,600	31,000	16,800	6,200	440	\$9,717,000	\$2,721,000	\$179,732,000	\$212,357,000
Churches	15,600	18,900	4,200	3,800	400	210	\$317,000	\$535,000	\$15,216,000	\$16,925,000
Cemeteries ⁵	15,400	5,600	3,600	650	800	10	\$674,000	\$1,348,000	\$21,957,000	\$6,023,000
Highway Roadsides	290,000	298,000	35	35	2,000	2,700	\$2,800,000	\$446,000	\$31,500,000	\$32,111,000
Airports	10,200	8,600	200	160	40	110	\$26,000	\$100,000	\$1,938,000	\$6,752,000
Parks	26,400	42,100	1,800	2,600	500	760	\$2,408,000	\$7,097,000	\$24,915,000	\$63,909,000
Schools ¹	43,200	43,300	2,100	2,400	700	800	\$3,449,000	\$7,643,000	\$16,407,000	\$49,207,000
Schools ²	-	6,500	-	1,100	-	60	-	\$442,000	-	\$10,955,000
Home Lawns	714,000	1,048,000	332,000	378,400	37,700	33,800	\$128,530,000	\$134,253,000	\$2,331,309,000	\$4,113,637,000
Lawn Service Companies	³	³	15,300	14,000	³	12,400	³	\$66,258,000	\$186,972,000	\$281,152,000
Total	1,368,200	1,702,000	394,135	424,225	50,540	52,570	\$188,539,000	\$229,603,000	\$2,963,089,000	\$5,026,349,000

¹ Public school systems, public & private universities
² Private K-12, pre-schools, private religious schools
³ Not asked in survey
⁴ 1998 revised
⁵ Cemeteries not comparable with 1998

Who has the Turfgrass?



Maintained Turf Acres by Sector, 1998 and 2004

Sector	1998	2004	Percent Increase
Golf Courses ³	33,600	36,900	9.8
Sod Farms	4,800	7,500	56.3
General Areas	215,000	186,600	-13.2
Churches	15,600	18,900	21.2
Cemeteries ¹	15,400	5,600	-63.6
Highway Roadsides	290,000	298,000	2.8
Airports	10,200	8,600	-15.7
Parks	26,400	42,100	59.5
Schools ²	43,200	49,800	15.3
Home Lawns	714,000	1,048,000	46.8
Total	1,368,200	1,702,000	24.4

¹ Cemeteries not comparable with 1998 ² All Schools ³ 1998 revised

Maintenance Expenses

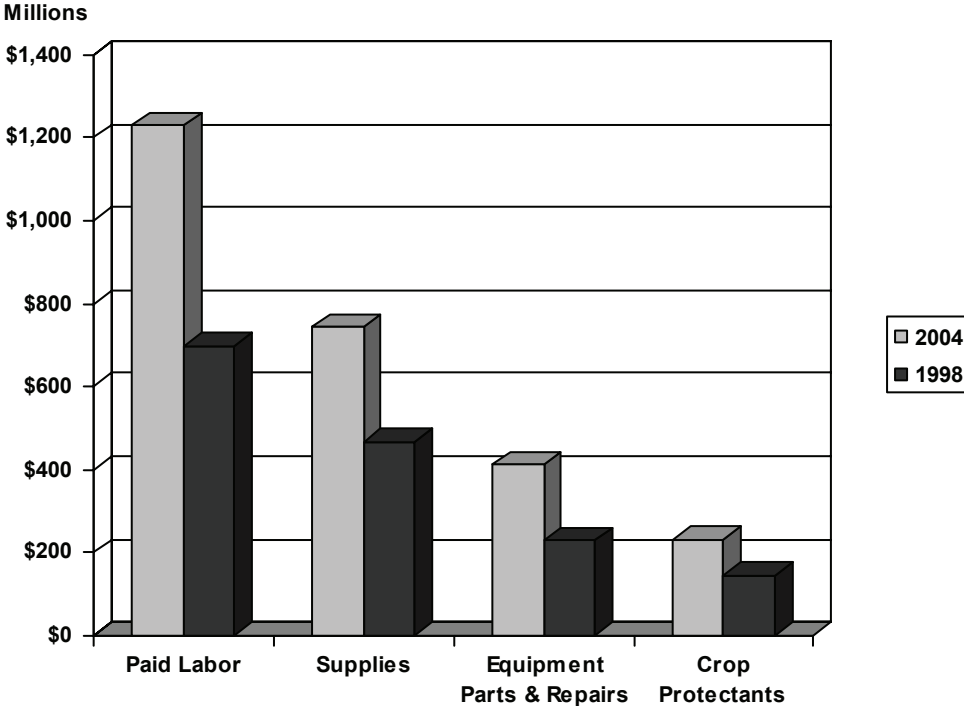
For the eleven sectors in this report, total annual maintenance expenses increased 70 percent from 1998.

Sector	Paid Labor ⁶		Supplies		Equipment Parts & Repairs	
	1998	2004	1998	2004	1998	2004
Golf Courses ⁴	\$57,360,000	\$66,148,000	\$13,656,000	\$15,833,000	\$12,087,000	\$15,367,000
Sod Farms	\$3,107,000	\$10,259,000	\$2,133,000	\$5,096,000	\$392,000	\$2,232,000
General Areas	\$161,847,000	\$184,086,000	\$40,923,000	\$27,686,000	\$21,819,000	\$20,747,000
Churches ⁵	\$8,654,000	\$17,095,000	\$1,498,000	\$1,600,000	\$2,494,000	\$2,001,000
Cemeteries	\$12,809,000	\$10,907,000	\$975,000	\$925,000	\$1,814,000	\$967,000
Highway Roadsides	\$15,925,000	\$11,592,000	\$870,000	\$1,324,000	\$2,500,000	\$11,789,000
Airports	\$508,000	\$1,765,000	\$51,000	\$174,000	\$52,000	\$277,000
Parks	\$9,386,000	\$33,809,000	\$2,898,000	\$5,339,000	\$1,722,000	\$5,499,000
Schools ¹	\$14,000,000	\$27,498,000	\$2,106,000	\$3,772,000	\$2,271,000	\$5,371,000
Schools ²	³	\$4,836,000	³	\$990,000	³	\$956,000
Home Lawns	\$244,342,000	\$616,197,000	\$319,165,000	\$596,313,000	\$159,622,000	\$315,787,000
Lawn Service Companies	\$170,950,000	\$244,426,000	\$83,119,000	\$84,116,000	\$24,653,000	\$31,269,000
Total	\$698,888,000	\$1,228,618,000	\$467,394,000	\$743,168,000	\$229,426,000	\$412,262,000

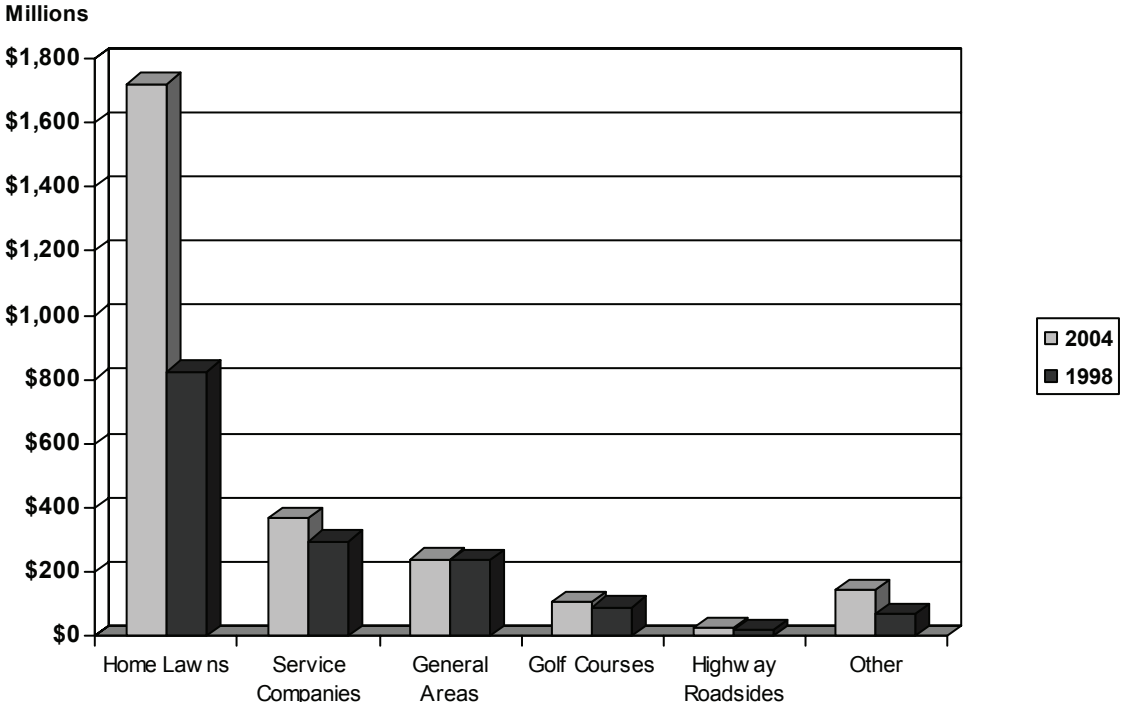
Sector (continued)	Crop Protectants		Total Expenses	
	1998	2004	1998	2004
Golf Courses ⁴	\$8,755,000	\$12,605,000	\$91,858,000	\$109,953,000
Sod Farms	\$196,000	\$1,529,000	\$5,828,000	\$19,116,000
General Areas	\$11,675,000	\$8,277,000	\$236,264,000	\$240,796,000
Churches	\$362,000	\$849,000	\$13,008,000	\$21,545,000
Cemeteries ⁵	\$194,000	\$251,000	\$15,792,000	\$13,050,000
Highway Roadsides	\$2,503,000	\$2,800,000	\$21,798,000	\$27,505,000
Airports	\$20,000	\$219,000	\$631,000	\$2,435,000
Parks	\$273,000	\$920,000	\$14,279,000	\$45,567,000
Schools ¹	\$650,000	\$814,000	\$19,027,000	\$37,455,000
Schools ²	³	\$187,000	³	\$6,969,000
Home Lawns	\$101,990,000	\$192,462,000	\$825,119,000	\$1,720,759,000
Lawn Service Companies	\$19,079,000	\$10,954,000	\$297,801,000	\$370,765,000
Total	\$145,697,000	\$231,867,000	\$1,541,405,000	\$2,615,915,000

¹ Public school systems, public & private universities ² Private K-12, pre-schools, and private religious schools ³ Group not surveyed in 1998 ⁴ 1998 revised
⁵ Cemeteries not comparable with 1998 ⁶ Paid labor excludes capital improvement labor costs

Turfgrass Maintenance Expenses 1998 & 2004



Turfgrass Annual Maintenance Expenses 1998 & 2004 By Sector



The sectors included in this report accounted for over \$4.6 billion in 2004 for paid labor, contract services, equipment, new turf establishment, and capital improvements. For the home lawn sector, the value of unpaid labor totaled an additional \$1.25 million.

Sector	Year	Non-Contract Paid Labor	Value of Unpaid Family Labor ⁷	Contract Services	Equipment ³	Non-equipment ⁴	Capital Improvements	Total Expenses
Golf Courses	1998	\$57,061,000	-	\$1,128,000	\$18,898,000	\$73,079,000	\$34,901,000	\$185,067,000
	2004	\$65,469,000	-	\$1,346,000	\$19,190,000	\$51,118,000	\$25,055,000	\$162,178,000
Sod Farms	1998	\$3,107,000	-	⁵	\$1,502,000	\$3,929,000	\$103,000	\$8,641,000
	2004	\$10,259,000	-	⁵	\$6,477,000	\$9,637,000	\$2,127,000	\$28,500,000
General Areas	1998	\$67,772,000	-	\$136,744,000	\$28,044,000	\$41,465,000	\$48,171,000	\$322,196,000
	2004	\$80,737,000	-	\$126,228,000	\$31,176,000	\$36,553,000	\$103,182,000	\$377,876,000
Churches & Cemeteries	1998	\$11,423,000	-	\$11,557,000	\$6,391,000	\$6,811,000	\$2,122,000	\$38,304,000
	2004	\$13,311,000	-	\$16,819,000	\$5,161,000	\$6,349,000	\$12,972,000	\$54,612,000
Highway Roadside	1998	\$6,725,000	-	\$10,100,000	\$2,600,000	\$7,773,000	-	\$27,198,000
	2004	\$11,592,000	-	-	\$2,890,000	\$16,359,000	-	\$30,841,000
Airports	1998	\$465,000	-	\$55,000	\$570,000	\$137,000	\$89,000	\$1,316,000
	2004	\$1,586,000	-	\$349,000	\$653,000	\$600,000	\$52,000	\$3,240,000
Parks	1998	\$9,386,000	-	⁵	\$5,773,000	\$7,301,000	\$23,743,000	\$46,203,000
	2004	\$33,809,000	-	⁵	\$9,432,000	\$18,855,000	\$52,238,000	\$114,334,000
Schools ¹	1998	\$14,000,000	-	⁵	\$2,118,000	\$8,476,000	\$4,820,000	\$29,414,000
	2004	\$27,498,000	-	⁵	\$7,049,000	\$17,600,000	\$14,734,000	\$66,881,000
Schools ²	1998	-	⁶	⁵	⁶	⁶	⁶	-
	2004	\$4,836,000	-	⁵	\$1,040,000	\$2,575,000	\$4,450,000	\$12,901,000
Home Lawns	1998	\$55,472,000	\$1,203,675,000	\$261,713,000	\$420,291,000	\$636,464,000	\$521,365,000	\$1,895,305,000
	2004	\$156,765,000	\$1,250,998,000	\$656,924,000	\$788,230,000	\$1,041,324,000	\$1,135,994,000	\$3,779,237,000
Total	1998	\$225,411,000	\$1,203,675,000	\$421,297,000	\$486,187,000	\$785,435,000	\$635,314,000	\$2,553,644,000
	2004	\$405,862,000	\$1,250,998,000	\$801,666,000	\$871,298,000	\$1,200,970,000	\$1,350,804,000	\$4,630,600,000

¹ Public school systems, public & private universities

² Private K-12, pre-schools, and private religious schools

³ Purchased and leased only in respective year

⁴ Includes annual maintenance expenses, except paid labor. Also includes new turf establishment costs and all other expenses not reported separately.

⁵ Not asked in survey

⁶ Not surveyed in 1998

⁷ Used \$5.35 per hour to complete value of unpaid labor

New Turf Acres

A total of 52,570 acres of new turf was established in 2004 at a cost of \$229.6 million.

Sector	New Turf Acres		Cost to Establish Turf	
	1998	2004	1998	2004
Golf Courses	1,600	680	\$39,410,000	\$7,979,000
Sod Farms	600	600	\$1,208,000	\$781,000
General Areas	6,200	440	\$9,717,000	\$2,721,000
Churches	400	210	\$317,000	\$535,000
Cemeteries ³	800	10	\$674,000	\$1,348,000
Highway Roadsides	2000	2,700	\$2,800,000	\$446,000
Airports	40	110	\$26,000	\$100,000
Parks	500	760	\$2,408,000	\$7,097,000
Schools ¹	700	800	\$3,449,000	\$7,643,000
Schools ²	⁴	60	⁴	\$442,000
Home Lawns	37,700	33,800	\$128,530,000	\$134,253,000
Lawn Service Companies	-	12,400	-	\$66,258,000
Total	50,540	52,570	\$188,539,000	\$229,603,000

¹ Public school systems, public & private universities

² Private K-12, pre-schools, and private religious schools

³ Cemeteries not comparable with 1998

⁴ Group not surveyed in 1998

Out of State Expenses

A total of 2.9 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004. The largest expense was paid labor nearly \$41.7 million. Equipment parts and repairs were also significant at \$14.9 million. Looking at individual sectors, more than 10.5 percent of maintenance expenses for airports were incurred outside Virginia. A total of 9.3 percent of all lawn service company maintenance expenses were incurred outside Virginia.

Sector	Paid Labor	Supplies	Equipment Parts And Repairs	Crop Protectants	Total	Percent of Total
	2004	2004	2004	2004	2004	2004
Golf Courses	\$3,135,000	\$1,656,000	\$1,630,000	\$2,373,000	\$8,794,000	8.0
Sod Farms	-	\$125,000	\$39,000	\$34,000	\$198,000	1.0
General Areas	\$8,188,000	\$174,000	\$131,000	\$59,000	\$8,552,000	3.6
Churches	\$113,000	\$45,000	\$18,000	-	\$176,000	0.8
Cemeteries	-	\$29,000	-	-	\$29,000	0.2
Highway Roadsides	-	-	-	-	-	-
Airports	\$179,000	\$28,000	\$42,000	\$8,000	\$257,000	10.6
Parks	\$2,000	\$51,000	\$63,000	\$8,000	\$124,000	0.3
Schools ¹	\$104,000	\$112,000	\$199,000	\$15,000	\$430,000	1.1
Schools ²	\$1,000	\$1,000	\$1,000	-	\$3,000	0.0
Home Lawns	\$8,592,000	\$4,205,000	\$8,120,000	\$1,998,000	\$22,915,000	1.3
Lawn Service Companies	\$21,366,000	\$7,221,000	\$4,665,000	\$1,329,000	\$34,581,000	9.3
Total	\$41,680,000	\$13,647,000	\$14,908,000	\$5,824,000	\$76,059,000	2.9

¹ Public school systems, public & private universities ² Private K-12, pre-schools, and private religious schools

Turf Management Problems by Sector, 2004
Top Eight Categories – Percent Reporting a Specific Turf Problem

Sector	Weeds	Wear & Compaction	Poor Soil	Labor	Poor Drainage	Insects	Shade	Disease
	2004	2004	2004	2004	2004	2004	2004	2004
Golf Courses	53	51	40	55	53	26	24	63
Sod Farms	67	25	17	58	17	33	8	42
General Areas	47	11	19	13	15	10	6	4
Churches	48	11	22	14	9	3	8	3
Cemeteries	70	26	65	39	26	13	22	4
Highway Roadsides	100	100	100	100	100	-	-	-
Airports	65	7	30	22	20	4	-	4
Parks	52	64	41	23	39	8	6	10
Schools ¹	52	61	43	26	36	11	8	9
Schools ²	44	48	26	22	25	5	10	4
Home Lawns	68	12	37	12	21	19	26	11
Lawn Service Companies	55	29	46	55	33	8	32	18

¹Public school systems, public & private universities ²Private K-12, pre-schools, and private religious schools

Primary Information Source by Sector, 2004
Top Eight Categories – Percent Reporting a Specific Information Source

Sector	County Extension Agent	Virginia Tech Specialist	Garden Center Nursery	Comm. Technical Specialist	Magazines	Peers	Private Consultant	Lawn Care Company
Golf Courses	12	46	4	38	61	69	26	5
Sod Farms	8	67	-	42	50	42	17	-
General Areas	10	5	16	9	11	8	4	21
Churches	10	5	20	7	5	18	6	23
Cemeteries	35	9	35	13	17	30	4	26
Highway Roadsides	-	100	-	100	-	100	-	-
Airports	33	4	11	17	9	22	17	11
Parks	35	36	7	24	43	39	10	21
Schools ¹	33	33	21	27	31	19	10	25
Schools ²	11	5	22	12	7	7	7	27
Home Lawns	8	3	42	6	23	26	2	16
Lawn Service Companies	36	34	25	42	48	40	6	19

¹Public school systems, public & private universities ²Private K-12, pre-schools, and private religious schools

Percent Attending Formal Turf Maintenance or Production Training Programs by Sector, 2004

Sector	Attended Training	No Training
	-Percent-	
Highway Roadsides	100	0
Golf Courses	67	33
Sod Farms	58	42
Lawn Service Companies	58	42
Parks	35	65
Schools ¹	29	71
Cemeteries	17	83
Airports	15	85
Schools ²	9	91
General Areas	4	96
Churches	2	98
Home Lawns	1	99

¹Public school systems, public & private universities ²Private K-12, pre-schools, and private religious schools

GOLF COURSES

General Statistics

Virginia's 345 golf courses maintained 36,900 acres of turf. Golf courses employed 2,400 full time workers and 1,700 part time workers for turf maintenance, a total of 4,100 employees. There were 680 acres of new turf established in 2004 at a cost of over \$7.9 million. Nearly \$19 million was spent on capital improvements (i.e. Drainage systems, irrigation systems, etc.) in 2004. There were more than 8.6 million rounds played on Virginia's golf courses during 2004.

General Statistics, Golf Courses, 1998 & 2004

Sector	Average Per Course		Total	
	1998 ¹	2004	1998 ¹	2004
Number of Courses	-	-	318	345
Rounds Played	25,302	25,072	8,046,000	8,650,000
Property Acres	176.7	171.0	56,200	59,000
Turf Acres	105.7	107.0	33,600	36,900
Number of Paid Workers	11.6	11.9	3,700	4,100
- Full Time	6.6	7.0	2,100	2,400
- Part Time	5.0	4.9	1,600	1,700
Value of Turf Equipment	\$440,657	\$550,003	\$140,129,000	\$189,751,000
Value of Turf Equipment Purchased & Leased 2004	\$59,428	\$55,623	\$18,898,000	\$19,190,000
New Turf Acres Established	5.0	2.0	1,600	680
Cost of Establishing New Turf	\$123,931	\$23,128	\$39,410,000	\$7,979,000
Capital Improvement Expense	\$104,167	\$54,562	\$33,125,000	\$18,824,000
Capital Improvement Labor Cost	\$5,585	\$18,061	\$1,776,000	\$6,231,000

¹Revised

Sixty-nine percent of all courses in Virginia were 18-hole courses. Sixty-five percent of Virginia golf courses were either private or semi-private facilities. Only 23 percent of the courses were considered public facilities. The remainder of all courses was either resorts or other types of facilities.

General Statistics, Golf Courses by Number of Holes, 1998 & 2004

General Information	9-Hole				18-Hole			
	Average Per Course		Total		Average Per Course		Total	
	1998	2004	1998 ¹	2004	1998	2004	1998 ¹	2004
Number of Courses	-	-	68	68	-	-	204	238
Rounds Played	4,765	9,559	324,000	650,000	28,289	26,945	5,771,000	6,413,000
Property Acres	82.4	101.5	5,600	6,900	179.4	173.1	36,600	41,200
Turf Acres	45.6	58.8	3,100	4,000	113.2	107.1	23,100	25,500
Number of Paid Workers	3.5	4.1	240	280	12.7	12.2	2,600	2,900
- Number of Full Time Workers	1.9	2.2	130	150	6.9	6.7	1,400	1,600
- Number of Part Time Workers	1.6	1.9	110	130	5.9	5.5	1,200	1,300
Value of Turf Equipment	\$128,750	\$207,074	\$8,755,000	\$14,081,000	\$519,574	\$562,660	\$105,993,000	\$133,913,000
New Turf Acres Established	0.7	0.9	50	60	5.9	1.1	1,200	250
Cost of Establishing New Turf	\$23,603	\$3,162	\$1,605,000	\$215,000	\$141,088	\$12,076	\$28,782,000	\$2,874,000
Capital Improvement Expense	\$7,912	\$15,706	\$538,000	\$1,068,000	\$113,598	\$47,824	\$23,174,000	\$11,382,000

General Information	27-Hole				36-Hole			
	Average Per Course		Total		Average Per Course		Total	
	1998	2004	1998 ¹	2004	1998	2004	1998 ¹	2004
Number of Courses	-	-	23	17	-	-	9	13
Rounds Played	41,435	37,059	953,000	630,000	72,889	47,538	656,000	618,000
Property Acres	330.4	200.0	7,600	3,400	455.6	384.6	4,100	5,000
Turf Acres	160.9	152.9	3,700	2,600	233.3	238.5	2,100	3,100
Number of Paid Workers	16.1	17.1	370	290	22.2	31.5	200	410
- Number of Full Time Workers	10.9	11.2	250	190	15.6	23.1	140	300
- Number of Part Time Workers	5.2	5.9	120	100	6.7	8.5	60	110
Value of Turf Equipment	\$587,783	\$905,000	\$13,519,000	\$15,385,000	\$503,778	\$1,073,462	\$4,534,000	\$13,955,000
New Turf Acres Established	8.3	4.1	190	70	20.0	23.1	180	300
Cost of Establishing New Turf	\$216,000	\$6,765	\$4,968,000	\$115,000	450,000	\$366,538	\$4,050,000	\$4,765,000
Capital Improvement Expense	\$34,696	\$181,353	\$798,000	\$3,083,000	755,000	\$206,077	\$6,795,000	\$2,679,000

General Information	Other				All Courses			
	Average Per Course		Total		Average Per Course		Total ²	
	1998	2004	1998 ¹	2004	1998	2004	1998 ¹	2004
Number of Courses	-	-	14	9	-	-	318	345
Rounds Played	24,429	37,667	342,000	339,000	25,302	25,072	8,046,000	8,650,000
Property Acres	164.3	277.8	2,300	2,500	176.7	171.0	56,200	59,000
Turf Acres	114.3	188.9	1,600	1,700	105.7	107.0	33,600	36,900
Number of Paid Workers	21.4	22.2	300	200	11.6	11.9	3,700	4,100
- Number of Full Time Workers	15.7	13.3	220	120	6.6	7.0	2,100	2,400
- Number of Part Time Workers	5.7	8.9	80	80	5.0	4.9	1,600	1,700
Value of Turf Equipment	\$523,429	\$1,379,667	\$7,328,000	\$12,417,000	\$440,657	\$550,003	\$140,129,000	\$189,751,000
New Turf Acres Established	0.0	0.0	0	0	5.0	2.0	1,600	680
Cost of Establishing New Turf	\$393	\$1,111	\$5,500	\$10,000	\$123,931	\$23,128	\$39,410,000	\$7,979,000
Capital Improvement Expense	\$130,000	\$68,000	\$1,820,000	\$612,000	\$104,167	\$54,562	\$33,125,000	\$18,824,000

¹Revised

²May not add due to rounding

General Statistics, Golf Courses by Type, 1998 & 2004

General Information	Private				Semi-Private			
	Average Per Course		Total		Average Per Course		Total	
	1998	2004	1998 ¹	2004	1998	2004	1998 ¹	2004
Number of Courses	-	-	123	121	-	-	96	103
Rounds Played	22,715	23,198	2,794,000	2,807,000	26,354	24,427	2,530,000	2,516,000
Property Acres	158.5	170.2	19,500	20,600	171.9	155.3	16,500	16,000
Turf Acres	101.6	114.9	12,500	13,900	104.2	101.0	10,000	10,400
Number of Paid Workers	11.9	14.7	1,460	1,780	11.5	10.9	1,100	1,120
- Number of Full Time Workers	7.2	9.3	890	1,120	5.3	5.9	510	610
- Number of Part Time Workers	4.6	5.5	570	660	6.1	5.0	590	510
Value of Turf Equipment	\$515,244	\$722,306	\$63,375,000	\$87,399,000	\$437,719	\$407,214	\$42,021,000	\$41,943,000
New Turf Acres Established	2.7	3.7	330	450	10.9	1.2	1,050	120
Cost of Establishing New Turf	\$18,642	\$45,165	\$2,293,000	\$5,465,000	\$276,302	\$1,641	\$26,525,000	\$169,000
Capital Improvement Expense	\$89,309	\$81,058	\$10,985,000	\$9,808,000	\$99,531	\$35,311	\$9,555,000	\$3,637,000

General Information	Public				Resort			
	Average Per Course		Total		Average Per Course		Total	
	1998	2004	1998 ¹	2004	1998	2004	1998 ¹	2004
Number of Courses	-	-	55	81	-	-	19	13
Rounds Played	27,618	26,691	1,519,000	2,162,000	40,368	31,077	767,000	404,000
Property Acres	178.2	158.0	9,800	12,800	347.4	323.1	6,600	4,200
Turf Acres	110.9	96.3	6,100	7,800	157.9	130.8	3,000	1,700
Number of Paid Workers	8.5	8.8	470	710	25.3	16.2	480	210
- Number of Full Time Workers	4.5	4.8	250	390	18.9	10.0	360	130
- Number of Part Time Workers	4.0	4.0	220	320	6.3	6.2	120	80
Value of Turf Equipment	\$331,382	\$472,580	\$18,226,000	\$38,279,000	\$610,263	\$850,923	\$11,595,000	\$11,062,000
New Turf Acres Established	2.7	0.4	150	30	5.3	0.0	100	0
Cost of Establishing New Turf	\$101,873	\$10,012	\$5,603,000	\$811,000	\$259,789	\$0	\$4,936,000	\$0
Capital Improvement Expense	\$181,545	\$20,667	\$9,985,000	\$1,674,000	\$115,368	\$15,615	\$2,192,000	\$203,000

General Information	Other				All Courses			
	Average Per Course		Total		Average Per Course		Total ²	
	1998	2004	1998 ¹	2004	1998	2004	1998 ¹	2004
Number of Courses	-	-	25	27	-	-	318	345
Rounds Played	17,440	28,185	436,000	761,000	25,302	25,072	8,046,000	8,650,000
Property Acres	148.0	200.0	3,700	5,400	176.7	171.0	56,200	59,000
Turf Acres	80.0	114.8	2,000	3,100	105.7	107.0	33,600	36,900
Number of Paid Workers	6.4	9.6	160	260	11.6	11.9	3,700	4,100
- Number of Full Time Workers	3.6	4.8	90	130	6.6	7.0	2,100	2,400
- Number of Part Time Workers	2.8	4.8	70	130	5.0	4.9	1,600	1,700
Value of Turf Equipment	\$196,440	\$409,926	\$4,911,000	\$11,068,000	\$440,657	\$550,003	\$140,129,000	\$189,751,000
New Turf Acres Established	0.4	3.0	10	80	5.0	2.0	1,600	680
Cost of Establishing New Turf	\$2,108	\$56,815	\$52,700	\$1,534,000	\$123,931	\$23,128	\$39,410,000	\$7,979,000
Capital Improvement Expense	\$16,280	\$129,704	\$407,000	\$3,502,000	\$104,167	\$54,562	\$33,125,000	\$18,824,000

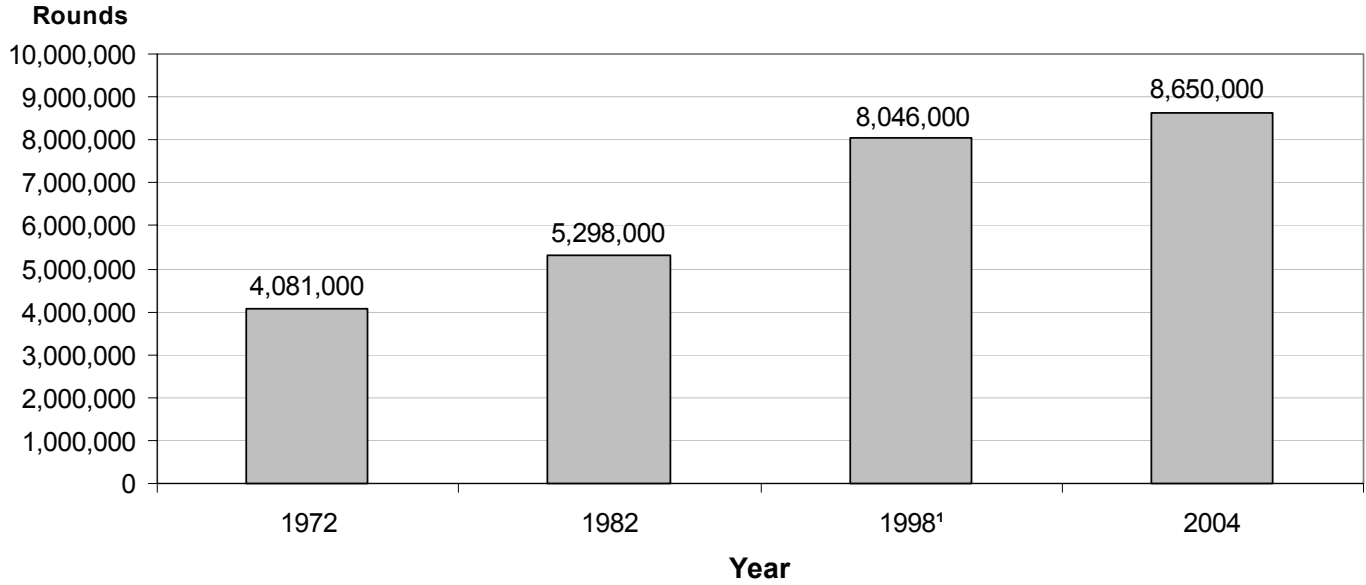
¹Revised

²May not add due to rounding

Rounds Played

The number of rounds played over the last 32 years has increased 112 percent.

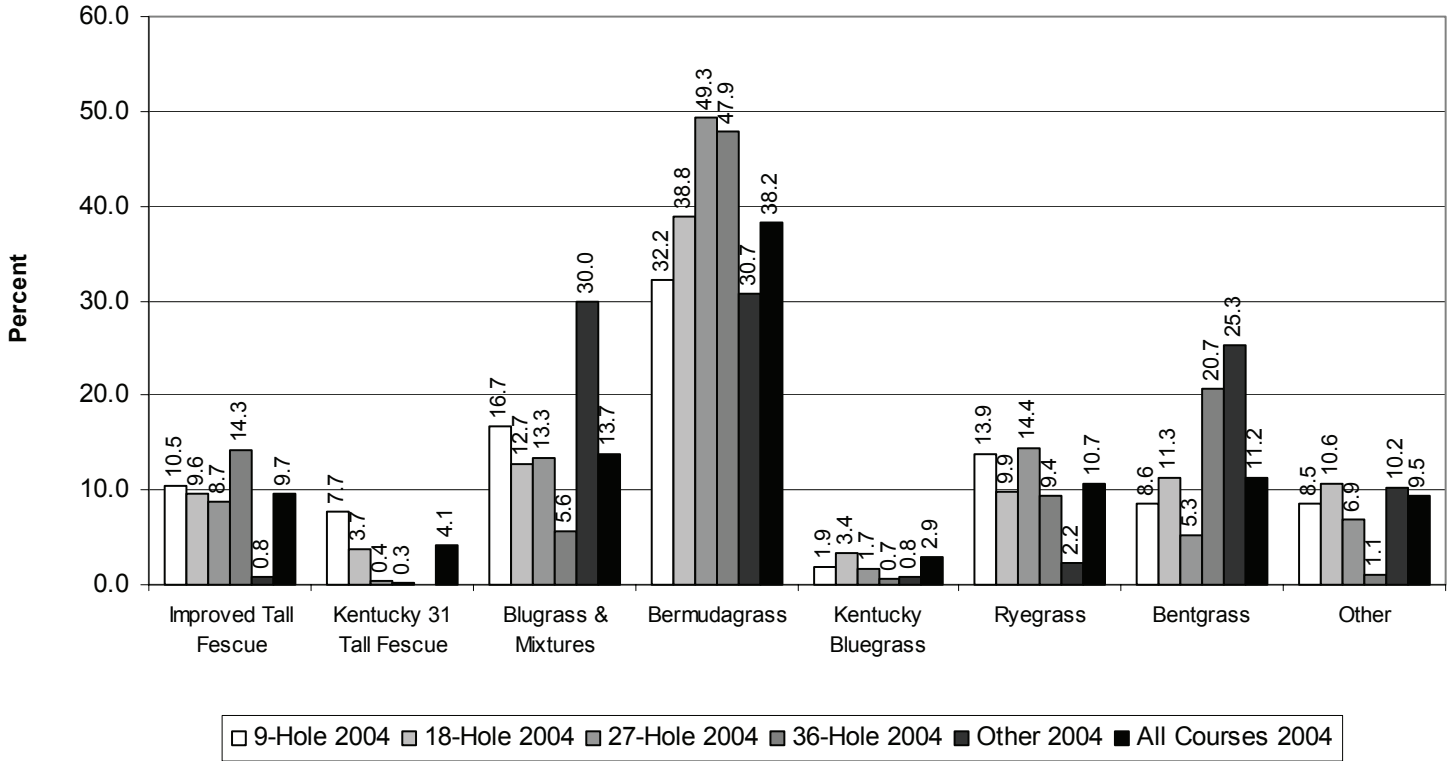
**Number of Rounds Played, Golf Courses
Comparison Between 1972, 1982, 1998, and 2004**



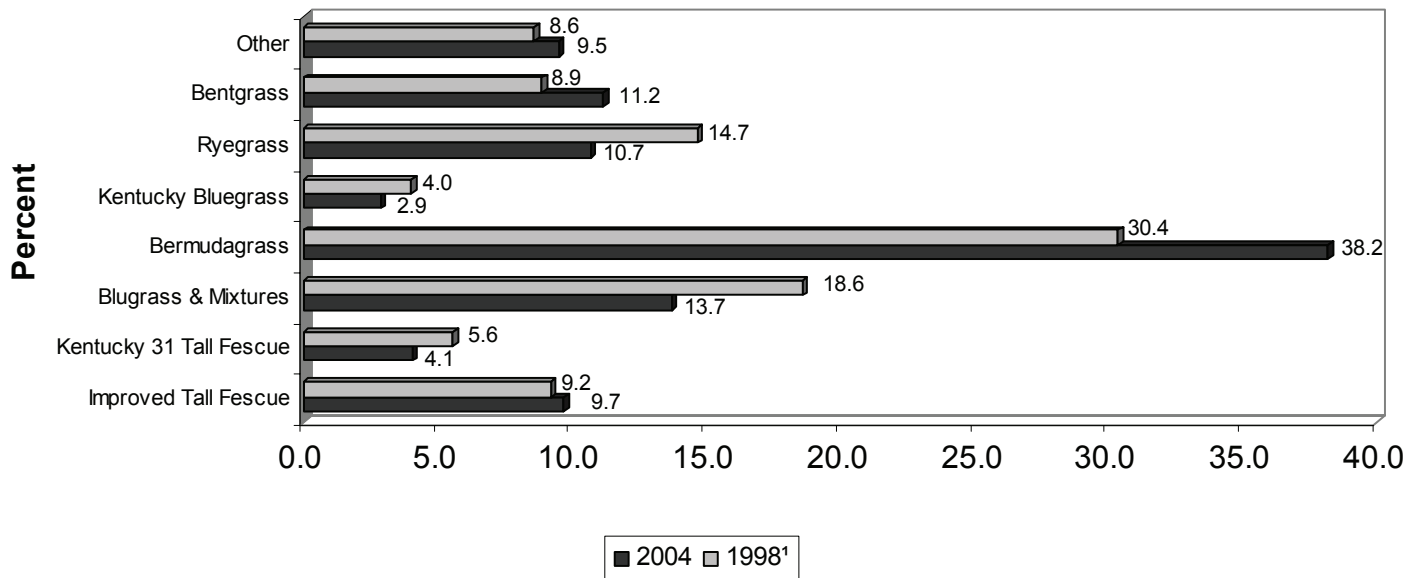
Maintained Turf Acres

Bermuda grass and Bluegrass & Bluegrass mixtures were the most prevalent grass varieties used on Virginia golf courses in 2004. A total of 38.2 percent of all turf acres was planted with Bermuda grass and 13.7 percent was planted with Bluegrass and Bluegrass mixtures.

Turf Acres by Principal Type of Grass Golf Courses, 2004



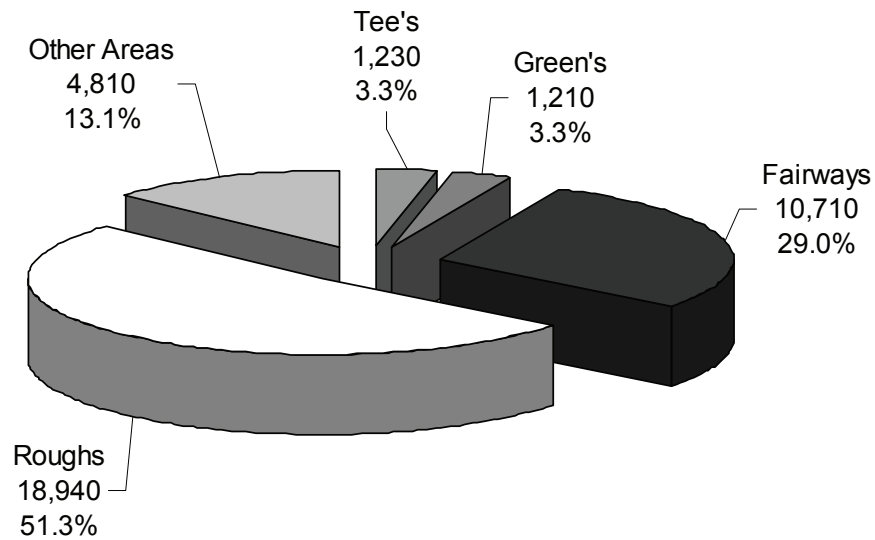
Turf Acres by Principal Type of Grass All Golf Courses, 1998 & 2004



¹ Revised

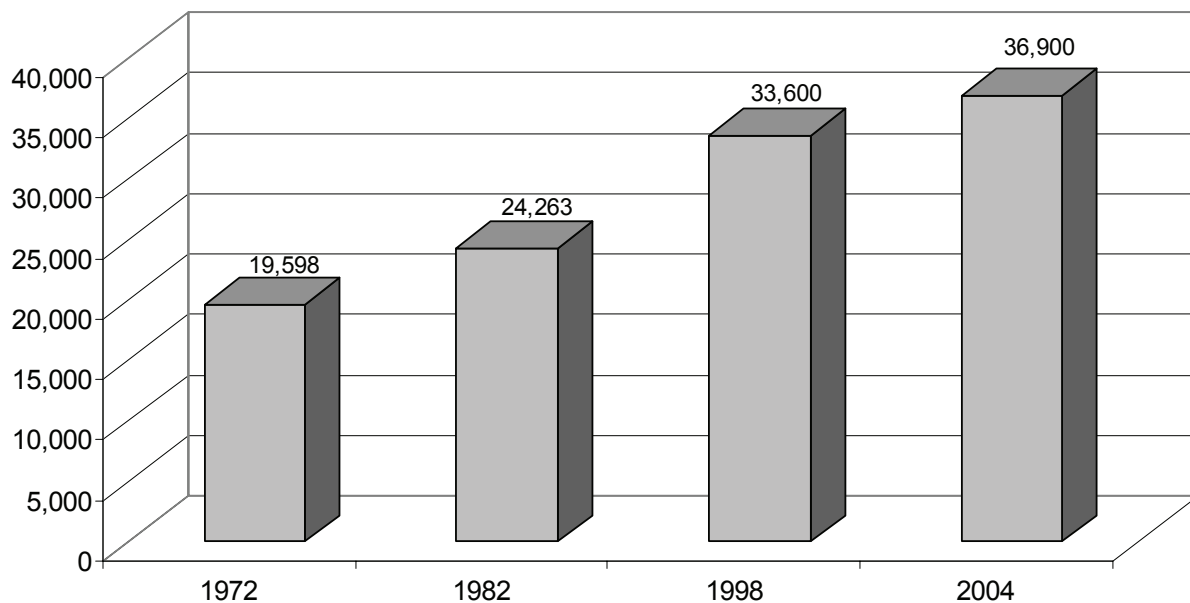
There were 36,900 acres of turf on Virginia's golf courses in 2004, averaging 107 acres of maintained turf per course. Of those, roughs and fairways accounted for 80.3 percent of all turf acres. Turf acres in tees and greens were equal at 3.3 percent.

Turf Acres by Use, Golf Courses, 2004
Total Acres - 36,900



Maintained turf acres at golf courses have increased 10 percent from 1998 to 2004. Since 1972 the overall increase in turf acres totaled 88 percent.

Maintained Turf Acres, Golf Courses
Comparison Between 1972-2004



Turf Maintenance Expenses

Nearly \$110 million was spent on turf maintenance during 2004, an average of \$318,704 per course. The largest expense was paid labor which accounted for \$66.1 million and was over 60 percent of the total expenses.

Type of Expense	Contract Expense		Non-Contract Expense		Total Expense		Percent of Total	
	1998 ¹	2004	1998 ¹	2004	1998 ¹	2004	1998	2004
Paid Labor:								
Mowing	\$36,000	\$327,000	\$33,679,000	\$36,560,000	\$33,715,000	\$36,887,000	37.5%	33.5%
Irrigation	\$5,000	\$75,000	\$6,631,000	\$5,934,000	\$6,636,000	\$6,009,000	7.4%	5.5%
Pesticide Application	\$0	\$58,000	\$4,232,000	\$6,061,000	\$4,232,000	\$6,119,000	4.7%	5.6%
Fertilizer Application	\$8,000	\$50,000	\$4,089,000	\$5,284,000	\$4,097,000	\$5,334,000	4.5%	4.9%
Other Expenses	\$13,000	\$169,000	\$6,891,000	\$11,630,000	\$6,904,000	\$11,799,000	7.7%	10.7%
Total Paid Labor²	\$62,000	\$679,000	\$55,522,000	\$65,469,000	\$55,584,000	\$66,148,000	61.8%	60.2%
Supplies:								
Fuel	\$30,000	\$43,000	\$2,050,000	\$3,344,000	\$2,080,000	\$3,387,000	2.3%	3.1%
Fertilizer and Lime	\$57,000	\$44,000	\$4,947,000	\$6,154,000	\$5,004,000	\$6,198,000	5.6%	5.6%
Seed	\$3,000	\$2,000	\$2,496,000	\$1,848,000	\$2,499,000	\$1,850,000	2.8%	1.7%
Sod, Sprigs	\$0	\$73,000	\$936,000	\$755,000	\$936,000	\$828,000	1.0%	0.8%
Topsoil and Mulch	\$13,000	\$0	\$790,000	\$903,000	\$803,000	\$903,000	0.9%	0.8%
Other Expenses	\$53,000	\$34,000	\$2,299,000	\$2,633,000	\$2,352,000	\$2,667,000	2.6%	2.4%
Total Supplies	\$156,000	\$196,000	\$13,518,000	\$15,637,000	\$13,674,000	\$15,833,000	15.2%	14.4%
Equipment Parts and Repairs:								
Mowing Equipment Supplies	\$42,000	\$57,000	\$2,386,000	\$2,895,000	\$2,428,000	\$2,952,000	2.7%	2.7%
Mowing Equipment Repairs	\$488,000	\$187,000	\$6,210,000	\$8,010,000	\$6,698,000	\$8,197,000	7.4%	7.5%
Irrigation Equipment Repairs	\$85,000	\$151,000	\$1,985,000	\$2,447,000	\$2,070,000	\$2,598,000	2.3%	2.3%
Other Expenses	\$33,000	\$23,000	\$821,000	\$1,597,000	\$854,000	\$1,620,000	0.9%	1.5%
Total Equipment Parts and Repairs	\$648,000	\$418,000	\$11,402,000	\$14,949,000	\$12,050,000	\$15,367,000	13.3%	14.0%
Crop Protectants:								
Weed Control Products	\$21,000	\$3,000	\$2,270,000	\$2,799,000	\$2,291,000	\$2,802,000	2.5%	2.5%
Insect Control Products	\$16,000	\$19,000	\$1,310,000	\$1,497,000	\$1,326,000	\$1,516,000	1.5%	1.4%
Disease Control Products	\$1,000	\$17,000	\$4,831,000	\$7,655,000	\$4,832,000	\$7,672,000	5.4%	7.0%
Other Expenses	\$0	\$13,000	\$267,000	\$602,000	\$267,000	\$615,000	0.3%	0.6%
Total Crop Protectants	\$38,000	\$52,000	\$8,678,000	\$12,553,000	\$8,716,000	\$12,605,000	9.7%	11.5%
Total Expenses	\$904,000	\$1,345,000	\$89,120,000	\$108,608,000	\$90,024,000	\$109,953,000	100.0%	100.0%

¹ Revised

² Paid labor excludes capital improvement labor costs

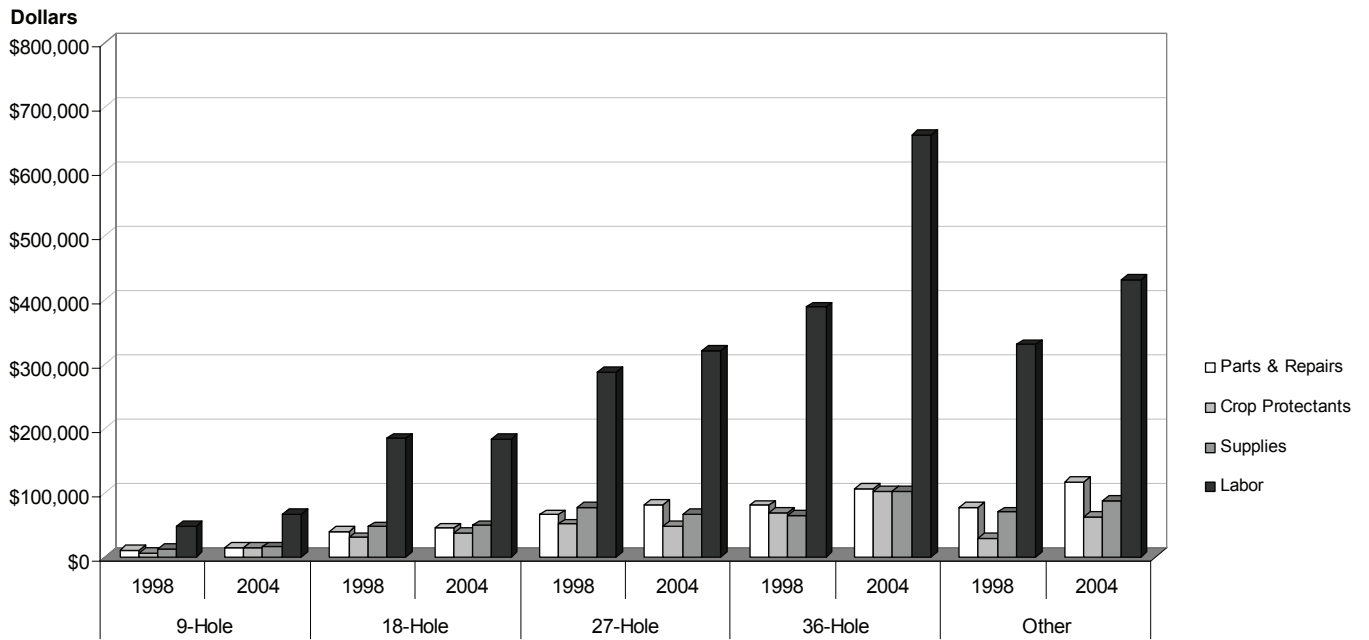
Paid labor was the largest maintenance expense by type of course averaging from \$66,798 per 9-hole course to \$656,968 per 36-hole course.

Average Expenses Per Course by Number of Holes, 1998 & 2004

	9-Hole		18-Hole		27-Hole		36-Hole		Other	
	1998 ¹	2004	1998 ¹	2004	1998 ¹	2004	1998 ¹	2004	1998 ¹	2004
Parts & Repairs	\$10,031	\$14,471	\$39,502	\$44,459	\$65,509	\$80,895	\$80,058	\$106,405	\$77,277	\$115,928
Crop Protectants	\$6,173	\$13,878	\$29,985	\$37,693	\$50,882	\$47,452	\$68,156	\$101,840	\$28,349	\$62,212
Supplies	\$12,762	\$15,231	\$46,602	\$48,537	\$76,266	\$66,452	\$64,093	\$102,393	\$69,313	\$87,175
Labor	\$47,246	\$66,798	\$184,568	\$183,806	\$286,874	\$320,186	\$388,518	\$656,968	\$330,287	\$430,739

¹ Revised

Turf Maintenance Expenses, Golf Courses, 1998 & 2004 Average Expenses Per Course by Number of Holes



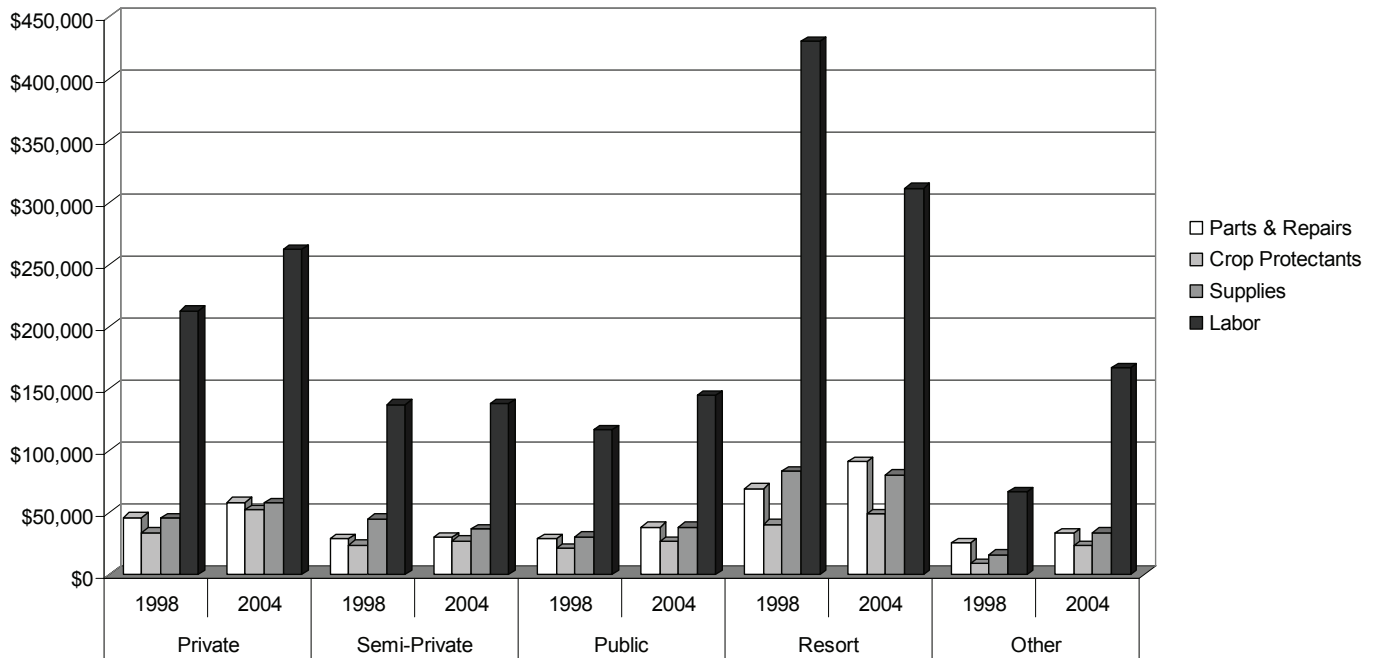
The average paid labor expense on public courses was \$144,651 compared with \$261,964 on private courses.

Average Expenses Per Course by Type, 1998 & 2004

	Private		Semi-Private		Public		Resort		Other	
	1998 ¹	2004	1998 ¹	2004	1998 ¹	2004	1998 ¹	2004	1998 ¹	2004
Parts & Repairs	\$46,374	\$58,390	\$29,151	\$30,200	\$28,815	\$38,317	\$69,680	\$91,283	\$25,534	\$33,375
Crop Protectants	\$34,258	\$52,427	\$24,233	\$27,598	\$21,291	\$26,511	\$40,904	\$48,906	\$9,155	\$23,543
Supplies	\$45,713	\$57,625	\$45,354	\$36,994	\$30,920	\$38,186	\$83,554	\$80,333	\$16,446	\$33,795
Labor	\$212,727	\$261,964	\$137,100	\$137,676	\$116,831	\$144,651	\$429,795	\$311,607	\$66,580	\$166,759

¹ Revised

Turf Maintenance Expenses, Golf Courses, 1998 & 2004 Average Expenses Per Course by Type



Out of State Expenses

A total of 8 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004 compared to 7.5 percent in 1998. The largest expense was paid labor at over \$3.1 million.

Turf Maintenance Expenses Incurred to Firms and Individuals Outside of Virginia, Golf Courses, 1998 & 2004 Total Dollars and Percent by Type of Expense

Type of Expense	Total Expense		Percent	
	1998	2004	1998	2004
Equipment Parts and Repairs	\$2,304,000	\$1,630,000	19.1%	10.6%
Supplies	\$1,923,000	\$1,656,000	14.1%	10.5%
Crop Protectants	\$1,414,000	\$2,373,000	16.2%	18.8%
Paid Labor	\$1,107,000	\$3,135,000	2.0%	4.7%
Total	\$6,748,000	\$8,794,000	7.5%	8.0%

Turf Maintenance Problems

Overall, golf courses reported the leading problems in turf management were disease, labor, weeds, and poor drainage. Wear and compaction was also a top concern. Leading problems varied by type of course. Labor was a major maintenance problem with 27-hole and 36-hole courses. Disease problems were a top concern with 9-hole, 18-hole, and "other" courses.

Problem	9-Hole	18-Hole	27-Hole	36-Hole	Other	All Courses
Disease	64	64	58	33	67	63
Labor	40	57	67	67	50	55
Weeds	57	53	50	44	50	53
Poor Drainage	43	57	50	33	33	53
Wear and Compaction	45	54	75	22	17	51
Poor Soil	34	40	67	44	0	40
Insects	32	26	25	11	17	26
Shade	17	25	25	22	33	24
Thatch	32	23	25	22	0	24
Erosion	9	10	25	11	0	10
Waste Clipping Disposal	0	4	17	11	0	4
Drought	4	2	0	0	0	2
Watering	4	1	0	0	0	2
Time	0	1	8	0	0	1
Animals/Rodents	0	1	0	0	0	0

Primary Information Source

Peers, magazines, and Virginia Tech specialists were the primary information sources for golf courses. Commercial technical specialists and private consultants were also rated highly by operators.

Primary Information Source, Golf Courses, 2004 Percent Reporting a Specific Information Source

Information Source	9-Hole	18-Hole	27-Hole	36-Hole	Other	All Courses
Peers	62	70	75	67	67	69
Magazines	55	63	67	67	33	61
Virginia Tech Specialist	38	49	58	22	33	46
Commercial Technical Specialists	34	40	33	22	17	38
Private Consultant	19	27	33	44	17	26
County Extension Agent	9	14	8	11	0	12
Lawn Care Co.	4	5	0	0	0	5
Internet	4	4	8	11	0	5
Garden Center/Nursery	0	5	0	0	0	4
Newspaper	4	3	0	0	17	3
No Source	2	2	0	0	0	2
College/Hort Major	2	2	0	0	0	2
TV/Radio	0	2	0	0	0	1
Seminars	0	1	8	0	0	1
Other University	0	1	0	0	17	1
Library	0	0	0	0	0	0
Research Reports	0	0	0	0	0	0

Training

A total of 67 percent of the turfgrass professionals working at golf courses had attended formal training during 2004.

Percent Attending Formal Turf Maintenance or Production Training Programs, Golf Courses, 2004

Attended Training	67%
No Training	33%
Total	100%

SOD FARMS

General Statistics

Virginia's 20 sod farms maintained 7,500 acres of turf, an average of 375 acres per farm. More than \$19.1 million was spent to maintain this turf using turf equipment worth over \$43.5 million. Sod farms employed 130 full time workers and 80 part time workers for a total of 180 employees. Sod farms established 600 acres of new turf at a cost of \$781,000. A total of \$2.1 million was spent on capital improvements (i.e. drainage systems, irrigation systems, etc.) in 2004. There were over 13.8 million yards of sod harvested in 2004. Gross sales of sod totaled over \$19.2 million in 2004.

General Statistics, Sod Farms, 1998 & 2004

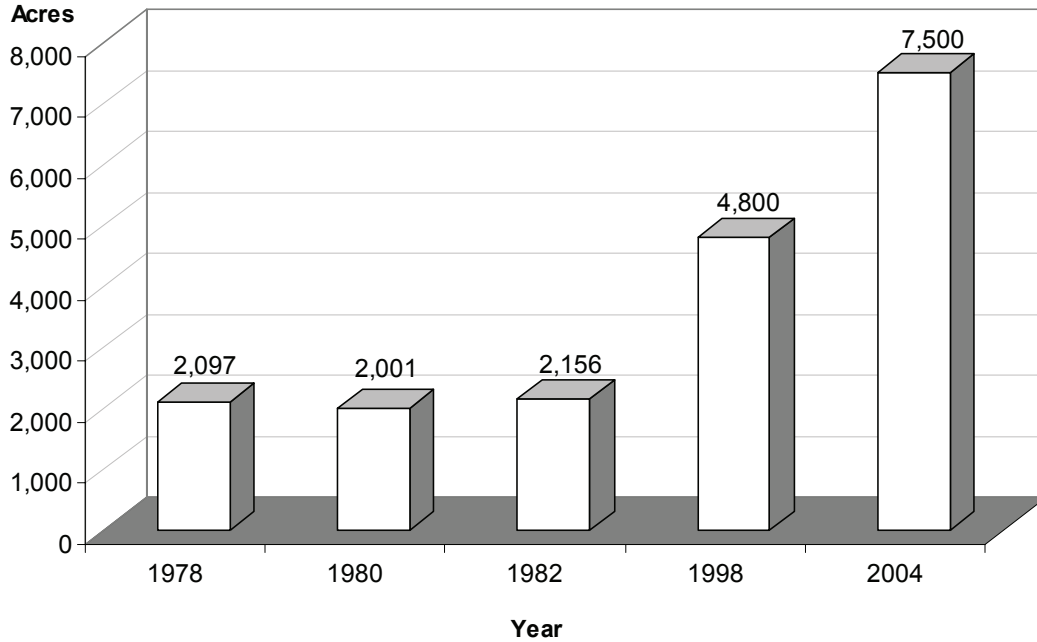
Item	Unit	Average		Total	
		1998	2004	1998	2004
Number of Sod Farms	number	-	-	19	20
Sod Acres in Production	acres	253 per farm	375 per farm	4,800	7,500
Sod Produced	yards	3,591 per acre	4,680 per acre	17,237,000	35,100,000
Sod Harvested	yards	1,664 per acre	1,842 per acre	7,987,000	13,818,000
Sod Sold	yards	424,737 per farm	690,350 per farm	8,070,000	13,807,000
Gross Sales from Sod	dollars	\$1.16 per yard	\$1.39 per yard	\$9,394,000	\$19,212,000
Sprigs Produced	bushels	-	-	703,000	1,122,000
Gross Income from Sod Installation Activities	dollars	\$56,579 per farm	\$434,850 per farm	\$1,075,000	\$8,697,000
Paid Labor:	number	10.6 per farm	9.0 per farm	200	180
-Full Time Workers	number	5.3 per farm	6.5 per farm	100	130
-Part Time Workers	number	5.3 per farm	2.5 per farm	100	50
Value of Turf Equipment	dollars	\$684,947 per farm	\$2,178,500 per farm	\$13,014,000	\$43,570,000
New Turf Acres Established	acres	31.6 per farm	30.0 per farm	600	600
Cost of Establishing New Turf	dollars	\$2,013 per acre	\$1,302 per acre	\$1,208,000	\$781,000
Capital Improvements	dollars	\$5,421 per farm	\$106,350 per farm	\$103,000	\$2,127,000

Maintained Turf Acres

Maintained turf acres on sod farms remained stable from 1978 to 1982 but increased 248 percent from 1982 to 2004. Since 1978 the overall increase in turf acres totaled 258 percent.

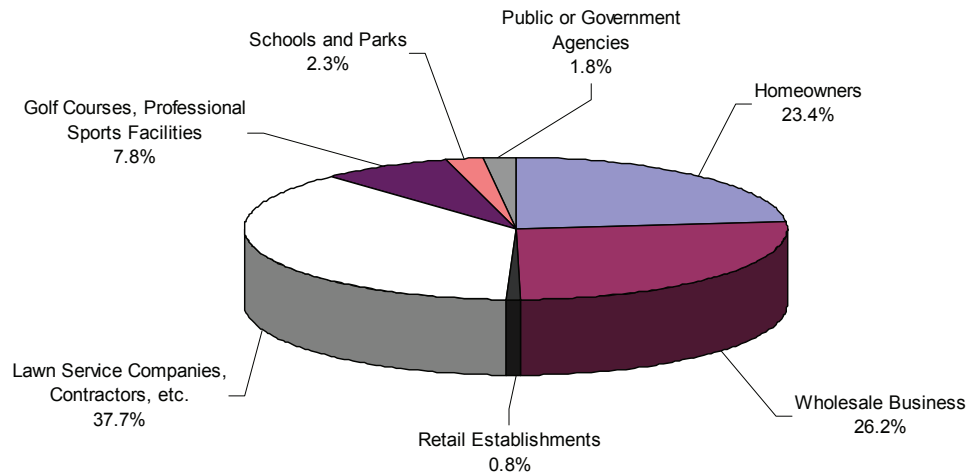
Turf Acres in Production, Sod Farms

Comparison Between 1978, 1980, 1982, 1998, and 2004



Percent Sod and Sprigs Sold by Customer

Sod Farms, 2004



Turf Maintenance Expenses

More than \$19.1 million was spent on turf maintenance during 2004, an average of \$955,800 per farm. The largest expense was paid labor which accounted for \$10.2 million and was 53 percent of total expenses.

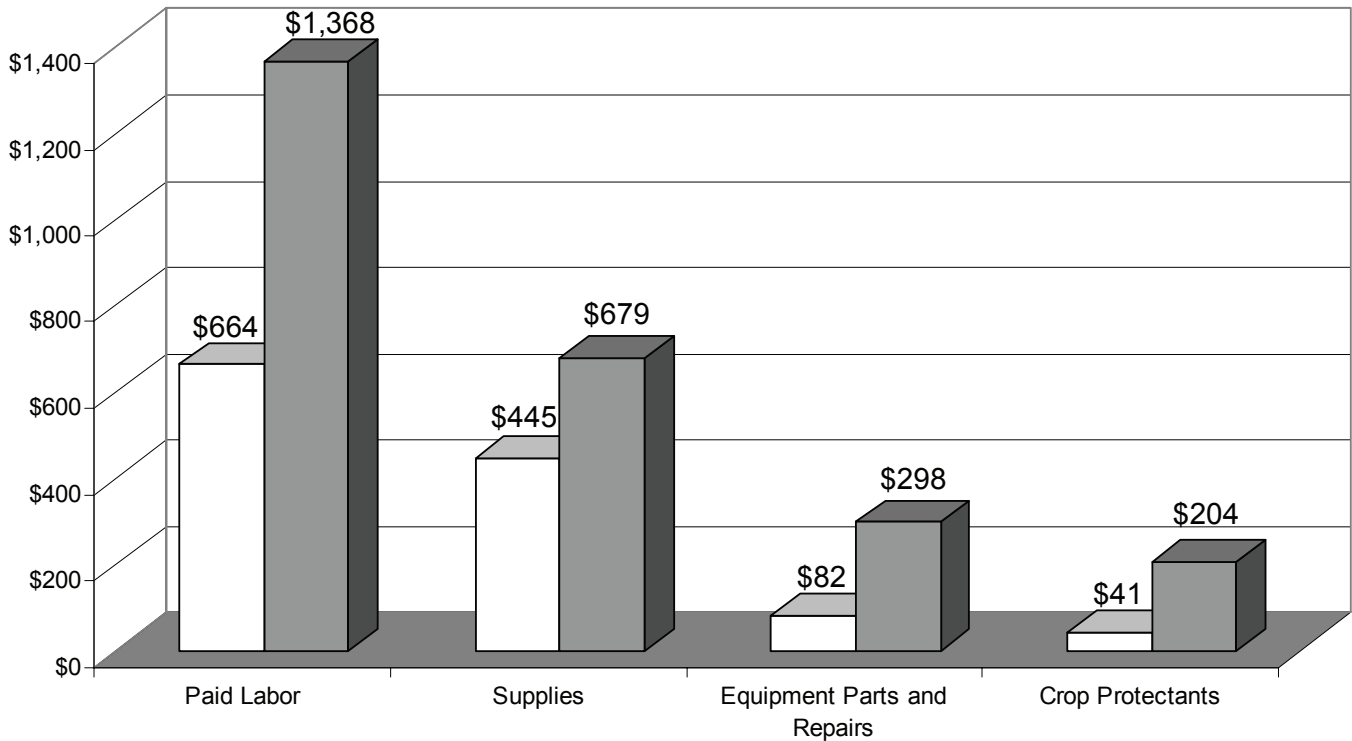
Turf Maintenance Expenses, Sod Farms, 1998 & 2004

Type of Expense	Total Expense		Percent of Total	
	1998	2004	1998	2004
Total Paid Labor	\$3,186,000	\$10,259,000	53.9%	53.7%
Total Supplies	\$2,136,000	\$5,096,000	36.1%	26.6%
Total Equipment Parts and Repairs	\$392,000	\$2,232,000	6.6%	11.7%
Total Crop Protectants	\$196,000	\$1,529,000	3.3%	8.0%
Total All Expenses	\$5,910,000	\$19,116,000	100.0%	100.0%

Paid labor and supplies accounted for the largest average expenses, at \$1,368 per acre and \$679 per acre respectively.

Turf Maintenance Expenses, Sod Farms, 1998 & 2004

Average Expenses Per Acre by Type



Out of State Expenses

A total of 1.0 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004. The largest expense was supplies at \$124,000.

Turf Maintenance Expenses Incurred to Firms and Individuals Outside of Virginia, Sod Farms, 1998 & 2004 Total Dollars and Percent by Type of Expense

Type of Expense	Total Expense		Percent	
	1998	2004	1998	2004
Supplies	\$257,000	\$124,000	14.8%	1.7%
Equipment Parts and Repairs	\$58,000	\$39,000	12.0%	2.4%
Crop Protectants	\$61,000	\$34,000	31.1%	2.2%
Paid Labor	\$47,000	\$0	1.5%	0.0%
Total	\$423,000	\$197,000	7.2%	1.0%

Turf Management Problems

Sod farms reported the leading problems in turf management were weeds and labor. Disease was also a top concern.

Primary Information Source

The primary sources of information for sod farms were Virginia Tech Specialists, magazines, peers, and commercial technical specialists.

Turf Management Problems, Sod Farms, 2004 Percent Reporting a Specific Turf Problem

Problem	Percent
Weeds	67
Labor	58
Disease	42
Insects	33
Erosion	33
Wear and Compaction	25
Poor Soil	17
Poor Drainage	17
Shade	8
Drought	8

Primary Information Source, Sod Farms, 2004 Percent Reporting a Specific Information Source

Information Source	Percent
Virginia Tech Specialist	67
Magazines	50
Peers	42
Commercial Technical Specialists	42
Private Consultant	17
County Extension Agent	8

Training

A total of 58 percent of the workers at sod farms had attended formal training during 2004.

Percent Attending Formal Turf Maintenance or Production Training Program, Sod Farms, 2004

Attended Training	58%
No Training	42%
Total	100%

GENERAL AREAS

General Statistics

The survey design for general areas covered multiple family dwellings, commercial properties, and government facilities. There were 20,883 general areas in 2004. These facilities employed 9,000 full time workers and 8,000 part time workers for a total of 17,000 employees. A total of over \$212.3 million worth of equipment was used to maintain 187,000 acres of turf. In 2004, there were 440 acres of new turf established and the cost to establish the turf was over \$2.7 million. There was nearly \$103.2 million worth of capital improvements (i.e. drainage systems, irrigation systems, etc.) done in 2004.

General Statistics, General Areas, 1998 & 2004

Item	Average Per Area		Total	
	1998	2004	1998	2004
Number of General Areas	-	-	25,950	20,883
Property Acres	38	54	979,000	1,134,000
Turf Acres	8.3	9.0	215,000	187,000
Number of Paid Workers	1.2	0.8	31,000	17,000
- Full Time	0.7	0.4	18,000	9,000
- Part Time	0.5	0.4	13,000	8,000
Value of Turf Equipment	\$6,926	\$10,169	\$179,732,000	\$212,357,000
New Turf Acres Established	0.2	0.0	6,200	440
Cost of Establishing New Turf	\$1,567 per acre	\$6,184 per acre	\$9,717,000	\$2,721,000
Capital Improvement Expense & Labor	\$1,856	4,941	\$48,171,000	\$103,182,000
Capital Improvement Labor Cost	1	157	1	\$3,270,000

¹ Not available

Turf Maintenance Expenses

Turf maintenance expenses for general areas totaled over \$240 million in 2004, an average of \$11,531 per area. The largest expense was paid labor which amounted to over \$184 million, representing 76.4% of total expenses. Supplies were the second largest expense of 2004 at 11.5% of total turf maintenance expenses.

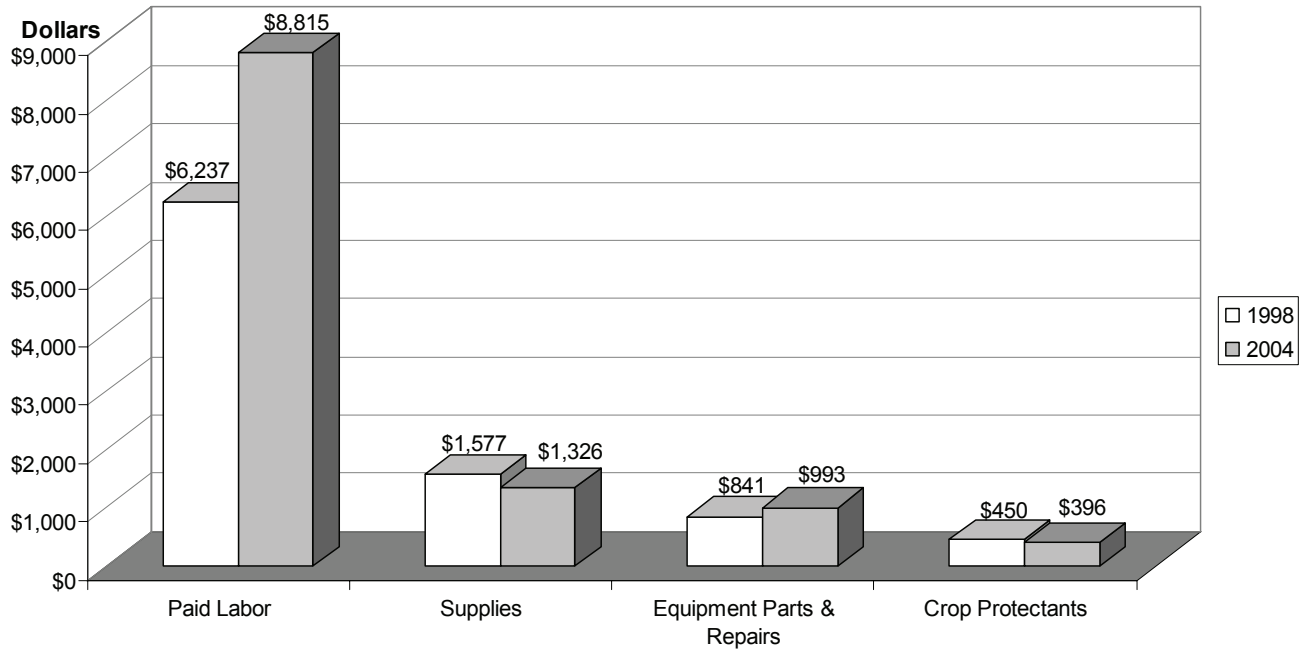
Turf Maintenance Expenses, General Areas, 1998 & 2004

Type of Expense	Total Expenses		Percent of Total	
	1998	2004	1998	2004
Paid Labor:				
Mowing	\$141,709,000	\$158,091,000	60.0%	65.7%
Pesticide & Fertilizer Application	\$8,502,000	\$11,373,000	3.6%	4.7%
Other Expenses	\$11,636,000	\$14,622,000	4.9%	6.0%
Total Paid Labor¹	\$161,847,000	\$184,086,000	68.5%	76.4%
Supplies:				
Water	\$7,491,000	\$3,597,000	3.2%	1.5%
Fuel	\$3,145,000	\$4,627,000	1.3%	1.9%
Fertilizer and Lime	\$4,927,000	\$6,000,000	2.1%	2.5%
Seed	\$3,396,000	\$2,694,000	1.4%	1.1%
Topsoil and Mulch	\$7,585,000	\$9,413,000	3.2%	3.9%
Other Expenses	\$14,379,000	\$1,355,000	6.1%	0.6%
Total Supplies	\$40,923,000	\$27,686,000	17.3%	11.5%
Equipment Parts and Repairs:				
Mowing Equipment Supplies	\$6,085,000	\$5,995,000	2.6%	2.5%
Mowing Equipment Repairs	\$6,979,000	\$10,231,000	3.0%	4.2%
Irrigation Equipment Repairs	\$3,895,000	\$2,370,000	1.7%	1.0%
Tools	\$2,507,000	\$1,268,000	1.1%	0.5%
Other Expenses	\$2,353,000	\$883,000	1.0%	0.4%
Total Equipment Parts and Repairs	\$21,819,000	\$20,747,000	9.4%	8.6%
Crop Protectants:				
Weed Control Products	\$4,209,000	\$5,477,000	1.8%	2.3%
Insect Control Products	\$5,277,000	\$1,600,000	2.2%	0.7%
Disease Control Products	\$1,339,000	\$734,000	0.6%	0.3%
Other Expenses	\$850,000	\$466,000	0.4%	0.2%
Total Crop Protectants	\$11,675,000	\$8,277,000	4.9%	3.5%
Total Expenses	\$236,264,000	\$240,796,000	100.0%	100.0%

¹ Paid labor excludes capital improvement labor costs

For general areas, the average area had expenses of \$8,815 for paid labor, \$1,326 for supplies, \$993 for equipment parts and repairs, and \$396 for crop protectants.

**Turf Maintenance Expenses, General Areas, 2004
Average Expenses per Area by Type**



Out of State Expenses

A total of 3.6 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004. The largest expense was paid labor at nearly \$8.2 million.

**Turf Maintenance Expenses Incurred to Firms and Individuals Outside of Virginia, General Areas, 2004
Total Dollars and Percent by Type of Expense**

Type of Expense	Total Expense		Percent	
	1998	2004	1998	2004
Paid Labor	\$9,679,000	\$8,188,000	6.0%	4.4%
Supplies and Other Expenses	\$2,217,900	\$174,000	5.4%	0.6%
Equipment, Parts, and Repairs	\$38,000	\$130,000	0.2%	0.6%
Crop Protectants	\$377,600	\$59,000	3.2%	0.7%
Total	\$12,312,500	\$8,551,000	5.2%	3.6%

Turf Management Problems

Weeds and poor soil were reported as the leading problems in turf management in 2004.

Turf Management Problems, General Areas, 2004 Percent Reporting a Specific Turf Problem

Problem	Percent
Weeds	47%
Poor Soil	19%
Poor Drainage	15%
Labor	13%
Wear and Compaction	11%
Insects	10%
Erosion	7%
Shade	6%
Disease	4%
Thatch	3%
Animals/Rodents	1%
Waste Clipping Disposal	1%

Primary Information Source

Lawn care companies and garden center\nursery were the primary sources for general areas in 2004.

Primary Information Source, General Areas, 2004 Percent Reporting a Specific Information Source

Information Source	Percent
Lawn Care Co.	21%
Garden Center/Nursery	16%
No Source	16%
Magazines	11%
County Extension Agent	10%
Commercial Technical Specialists	9%
Peers	8%
Virginia Tech Specialist	5%
Private Consultant	4%
Newspaper	4%
TV/Radio	3%
Internet	1%
Other Source	1%

Training

A total of 4 percent of the people working on turf maintenance had attended formal training during 2004.

Attended Training	4%
No Training	96%
Total	100%

CHURCHES

General Statistics

There were 9,225 churches with turf in Virginia in 2004. These churches employed 3,800 people whose primary responsibility was to maintain turf. Of these 3,800 workers 700 were full time employees and 3,100 were part time employees. These workers maintained 18,900 acres of turf using \$3.8 million of turf equipment. Churches established 210 acres of new turf in 2004 at a cost of \$535,000. Capital improvement projects (i.e. drainage systems, irrigation systems, etc.) totaled more than \$7.4 million in 2004 or \$808 per church.

General Statistics, Churches, 1998 & 2004

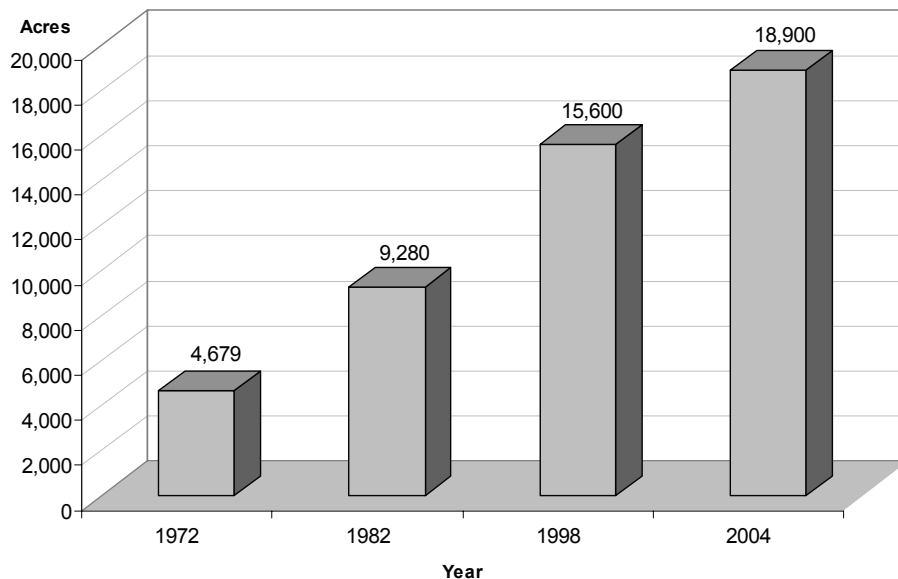
Item	Average Per Area		Total	
	1998	2004	1998	2004
Number of Churches	-	-	7,301	9,225
Property Acres	5.1	4.4	37,600	40,700
Turf Acres	2.1	2.0	15,600	18,900
Number of Paid Workers	0.6	0.4	4,200	3,800
- Full Time	0.1	0.1	800	700
- Part Time	0.5	0.3	3,400	3,100
Value of Turf Equipment	\$2,084	\$205	\$15,216,000	\$3,868,000
New Turf Acres Established	0.1	0.0	400	210
Cost of Establishing New Turf	\$793 per acre	\$2,548 per acre	\$317,000	\$535,000
Capital Improvement Expense	\$253	\$808	\$1,847,000	\$7,458,000
Capital Improvement Labor Cost	¹	\$51	¹	\$474,000

¹ Not available

Maintained Turf Acres

The number of turf acres in 2004 totaled 18,900 or 2 acres per church. Turf acreage has steadily increased since 1972, increasing 304 percent from 1972 to 2004. From 1982 to 1998, there was a 68 percent increase in turf acres and from 1998 to 2004, acreage increased 21 percent.

Maintained Turf Acres, Churches Comparison Between 1972, 1982, 1998, and 2004



Turf Maintenance Expenses

Churches spent over \$21.5 million on turf maintenance in 2004. The largest expense was paid labor which accounted for over \$17 million and was over 79 percent of the total expenses. Equipment parts and repairs were over 9 percent of the total turf maintenance costs and was the second largest expense in 2004. Total maintenance expenses averaged \$2,336 per church.

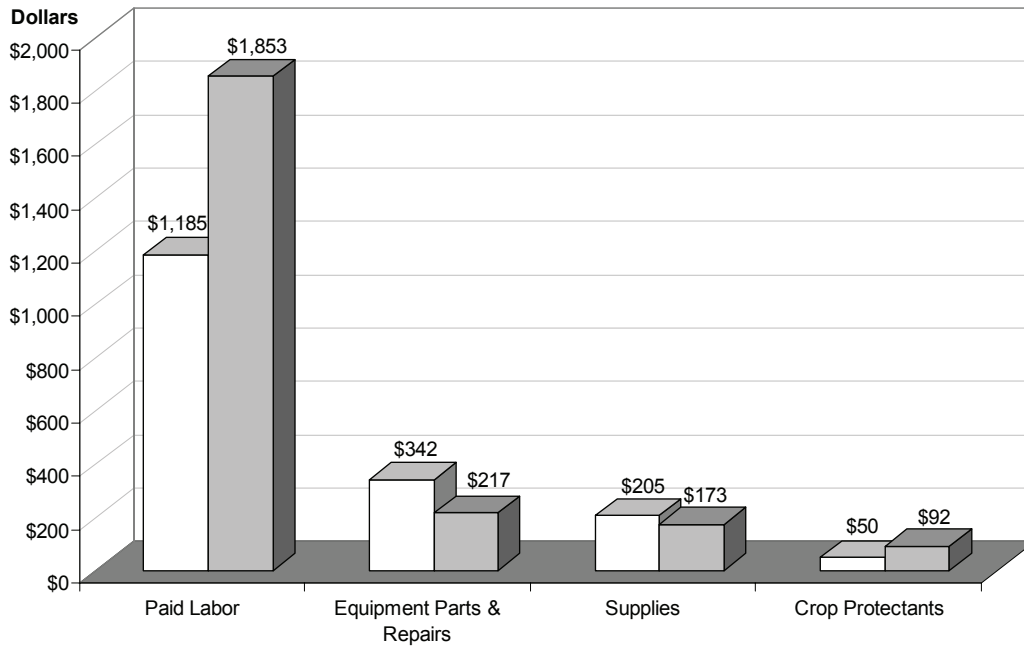
Turf Maintenance Expenses, Churches, 1998 & 2004

Type of Expense	Contract Expense		Non-Contract Expense		Total Expense		Percent of Total	
	1998	2004	1998	2004	1998	2004	1998	2004
Paid Labor:								
Mowing	\$5,702,000	\$12,635,000	\$2,617,000	\$3,509,000	\$8,319,000	\$16,144,000	64.0%	74.9%
Pesticide & Fertilizer Application	\$182,000	\$167,000	\$55,000	\$142,000	\$237,000	\$309,000	1.8%	1.4%
Other Expenses	\$73,000	\$526,000	\$25,000	\$116,000	\$98,000	\$642,000	0.7%	3.0%
Total Paid Labor¹	\$5,957,000	\$13,328,000	\$2,697,000	\$3,767,000	\$8,654,000	\$17,095,000	66.5%	79.3%
Supplies:								
Water	\$24,000	\$38,000	\$304,000	\$197,000	\$328,000	\$235,000	2.5%	1.1%
Fuel	\$0	\$11,000	\$374,000	\$389,000	\$374,000	\$400,000	2.9%	1.9%
Fertilizer and Lime	\$21,000	\$204,000	\$229,000	\$202,000	\$250,000	\$406,000	1.9%	1.9%
Seed	\$7,000	\$86,000	\$110,000	\$57,000	\$117,000	\$143,000	0.9%	0.7%
Topsoil and Mulch	\$45,000	\$160,000	\$361,000	\$223,000	\$406,000	\$383,000	3.1%	1.8%
Other Expenses	\$10,000	\$0	\$13,000	\$32,000	\$23,000	\$33,000	0.2%	0.2%
Total Supplies	\$107,000	\$499,000	\$1,391,000	\$1,100,000	\$1,498,000	\$1,600,000	11.5%	7.6%
Equipment Parts and Repairs:								
Mowing Equipment Supplies	\$140,000	\$109,000	\$642,000	\$432,000	\$782,000	\$541,000	6.0%	2.5%
Mowing & Irrigation Equipment Repairs	\$980,000	\$61,000	\$544,000	\$484,000	\$1,524,000	\$545,000	11.7%	2.5%
Other Expenses	\$0	\$626,000	\$188,000	\$289,000	\$188,000	\$915,000	1.5%	4.2%
Total Equipment Parts and Repairs	\$1,120,000	\$796,000	\$1,374,000	\$1,205,000	\$2,494,000	\$2,001,000	19.2%	9.2%
Crop Protectants:								
Weed Control Products	\$16,000	\$334,000	\$145,000	\$151,000	\$161,000	\$485,000	1.2%	2.3%
Insect & Disease Control Products	\$82,000	\$109,000	\$37,000	\$30,000	\$119,000	\$139,000	0.9%	0.6%
Other Expenses	\$82,000	\$225,000	\$0	\$0	\$82,000	\$225,000	0.7%	1.0%
Total Crop Protectants	\$180,000	\$668,000	\$182,000	\$181,000	\$362,000	\$849,000	2.8%	3.9%
Total Expenses	\$7,364,000	\$15,291,000	\$5,644,000	\$6,253,000	\$13,008,000	\$21,545,000	100.0%	100.0%

¹ Paid labor excludes capital improvement labor costs

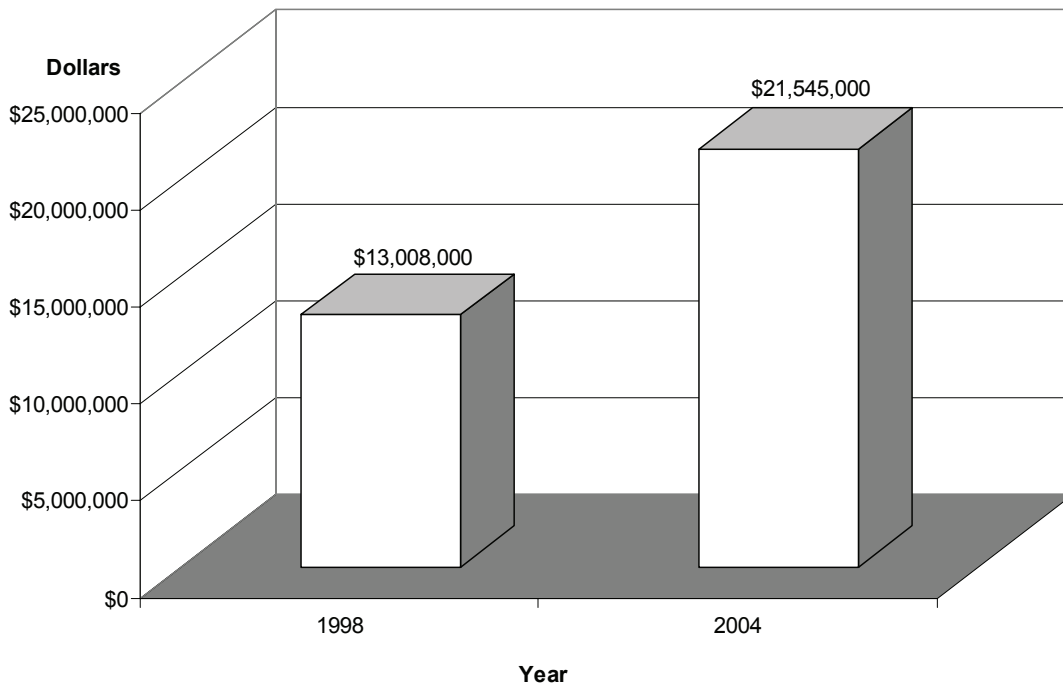
Churches spent an average of \$1,853 on paid labor, \$217 on equipment parts and repairs, \$173 on supplies, and \$92 on crop protectants.

Turf Maintenance Expenses, Churches, 1998 & 2004
Average Expenses per Church by Type



Maintenance expenses for churches increased 66 percent from 1998 to 2004. Part of this can be attributed to the increase in turf acres from 15,600 in 1998 to 18,900 in 2004.

Turf Maintenance Expenses, Churches, 2004
Comparison Between 1998 and 2004



Out of State Expenses

A total of 0.8 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004. The largest expense was paid labor at \$113,000.

Turf Maintenance Expenses Incurred to Firms and Individuals Outside of Virginia, Churches, 2004 Total Dollars and Percent by Type of Expense

Type of Expense	Total Expense		Percent	
	1998	2004	1998	2004
Paid Labor	\$120,000	\$113,000	1.4%	0.7%
Supplies	\$0	\$45,000	0.0%	2.8%
Equipment Parts and Repairs	\$6,300	\$18,000	0.3%	1.0%
Crop Protectants	\$0	\$0	0.0%	0.0%
Total	\$126,300	\$176,000	1.0%	0.8%

Turf Management Problems

Weeds and poor soil were reported as the leading problems in turf management in 2004 for churches. Labor problems were also a top concern.

Turf Management Problems, Churches, 2004 Percent Reporting a Specific Turf Problem

Problem	Percent
Weeds	48%
Poor Soil	22%
Labor	14%
Wear and Compaction	11%
Erosion	9%
Poor Drainage	9%
Shade	8%
Waste Clipping Disposal	4%
Thatch	3%
Disease	3%
Insects	3%
Drought	2%
Animals/Rodents	1%
Tree Roots	1%

Primary Information Source

Lawn care companies, garden center/nurseries, and peers were the primary information sources for churches in 2004.

Primary Information Source, Churches, 2004 Percent Reporting a Specific Information Source

Information Source	Percent
Lawn Care Co.	23%
Garden Center/Nursery	20%
Peers	18%
No Source	17%
County Extension Agent	10%
Commercial Technical Specialists	7%
Private Consultant	6%
Magazines	5%
Virginia Tech Specialist	5%
Newspaper	4%
TV/Radio	4%
Internet	1%
Other Source	1%

Training

A total of 2 percent of the people working on turf maintenance had attended formal training during 2004.

Percent Attending Formal Turf Maintenance or Production Training Program, Churches, 2004

Attended Training	2%
No Training	98%
Total	100%

CEMETERIES

General Statistics

The survey design for cemeteries was different from what was used in prior years, so data is not comparable with previous surveys. The 2004 survey design included all licensed commercial cemeteries in the state of Virginia. For 2004 there were 123 licensed cemeteries maintaining 5,600 acres of turf. Cemeteries owned or leased over 6 million worth of turf equipment. Licensed cemeteries in Virginia employed 420 full time and 230 part time workers for a total of 650 in 2004. Cemeteries established 10 acres of new turf at a cost of \$1,348,000. Capital improvements (i.e. drainage systems, irrigation systems, etc.) totaled \$5,514,000 in 2004.

General Statistics, Cemeteries, 2004

Item	Average per Area	Total
	2004	2004
Number of Churches	-	123
Property Acres	61.0	7,500
Turf Acres	45.5	5,600
Number of Paid Workers	5.3	650
- Full Time	3.4	420
- Part Time	1.9	230
Value of Turf Equipment	\$48,967	\$6,023,000
New Turf Acres Established	0.1	10
Cost of Establishing New Turf	\$134,800 per acre	\$1,348,000
Capital Improvement Expense & Labor	\$44,829	\$5,514,000
Capital Improvement Labor Cost	\$8,504	\$1,046,000

Turf Maintenance Expenses

Turf maintenance expenses for cemeteries totaled over \$13 million in 2004, an average of \$106,098 per cemetery. The largest expense was paid labor which amounted to over \$10.9 million, nearly 84 percent of total expenses. Equipment parts and repairs were the second largest expense of 2004 at over 7 percent of total turf maintenance expenses.

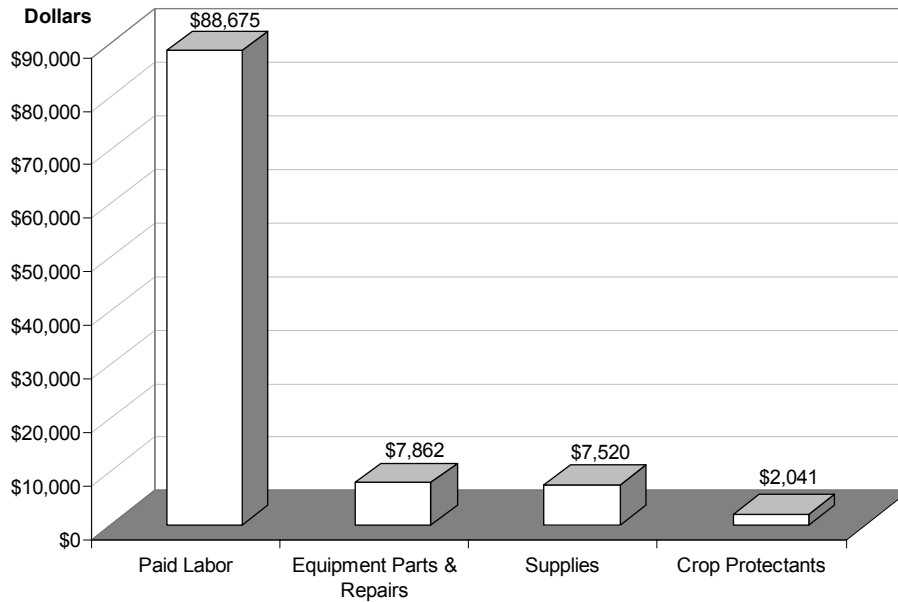
Turf Maintenance Expenses, Cemeteries, 2004

Type of Expense	Contract Expense	Non-Contract Expense	Total Expense	Percent
	2004	2004	2004	2004
Paid Labor:				
Mowing	\$1,343,000	\$8,634,000	\$9,977,000	76.5%
Pesticide and Fertilizer Application	\$1,000	\$190,000	\$191,000	1.4%
Other Expenses	\$20,000	\$719,000	\$739,000	5.7%
Total Paid Labor¹	\$1,364,000	\$9,543,000	\$10,907,000	83.6%
Supplies:				
Fuel	\$2,000	\$397,000	\$399,000	3.1%
Fertilizer and Lime	\$1,000	\$112,000	\$113,000	0.9%
Seed	\$0	\$103,000	\$103,000	0.8%
Sod, Sprigs	\$0	\$59,000	\$59,000	0.4%
Topsoil and Mulch	\$0	\$114,000	\$114,000	0.9%
Other Expenses	\$0	\$137,000	\$137,000	1.0%
Total Supplies	\$3,000	\$922,000	\$925,000	7.1%
Equipment Parts and Repairs:				
Mowing Equipment Supplies	\$2,000	\$327,000	\$329,000	2.5%
Mowing Equipment Repairs	\$5,000	\$326,000	\$331,000	2.5%
Other Expenses	\$152,000	\$155,000	\$307,000	2.4%
Total Equipment Parts and Repairs	\$159,000	\$808,000	\$967,000	7.4%
Crop Protectants:				
Weed Control Products	\$2,000	\$210,000	\$212,000	1.6%
Insect Control Products	\$0	\$39,000	\$39,000	0.3%
Total Crop Protectants	\$2,000	\$249,000	\$251,000	1.9%
Total Expenses	\$1,528,000	\$11,522,000	\$13,050,000	100.0%

¹ Paid labor excludes capital improvement labor costs

For cemeteries, paid labor was by far the largest average expense at \$88,675 per cemetery. By contrast, the average expense for crop protectants was \$2,041 per cemetery.

**Turf Maintenance Expenses, Cemeteries, 2004
Average Expenses per Cemetery by Type**



Out of State Expenses

A total of 0.2 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004. The only expense was supplies at nearly \$29,000.

**Turf Maintenance Expenses Incurred to Firms and Individuals Outside of Virginia, Cemeteries, 2004
Total Dollars and Percent by Type of Expense**

Type of Expense	Total	Percent
Supplies	\$29,000	3.4%
Total	\$29,000	0.2%

Turf Management Problems

Weeds and poor soil were reported as the leading problems in turf management in 2004. Labor problems were also a top concern.

Turf Management Problems, Cemeteries, 2004 Percent Reporting a Specific Turf Problem

Problem	Percent
Weeds	70%
Poor Soil	65%
Labor	39%
Wear and Compaction	26%
Poor Drainage	26%
Shade	22%
Insects	13%
Thatch	9%
Erosion	9%
Waste Clipping Disposal	9%
Disease	4%

Primary Information Source

County extension agents and garden center/nurseries were the primary information sources for cemeteries in 2004.

Primary Information Source, Cemeteries, 2004 Percent Reporting a Specific Information Source

Information Source	Percent
County Extension Agent	35%
Garden Center/Nursery	35%
Peers	30%
Lawn Care Co.	26%
Magazines	17%
Commercial Technical Specialists	13%
Virginia Tech Specialist	9%
No Source	9%
Private Consultant	4%

Training

A total of 17 percent of the turfgrass professionals at cemeteries had attended formal training during 2004.

Attended Training	17%
No Training	83%
Total	100%

HIGHWAY ROADSIDES

General Statistics

This sector consists entirely of information supplied by the Virginia Department of Transportation (VDOT) and includes information covering only those roadsides maintained by VDOT. Maintained turf acres totaled 298,000. VDOT owned over \$35 million worth of turf equipment in 2004. VDOT employs 35 people full time to maintain turf on roadsides (this excludes labor contracted by VDOT for roadside turf maintenance). VDOT established 2,700 acres of new turf in 2004 compared with 2,000 acres in 1998.

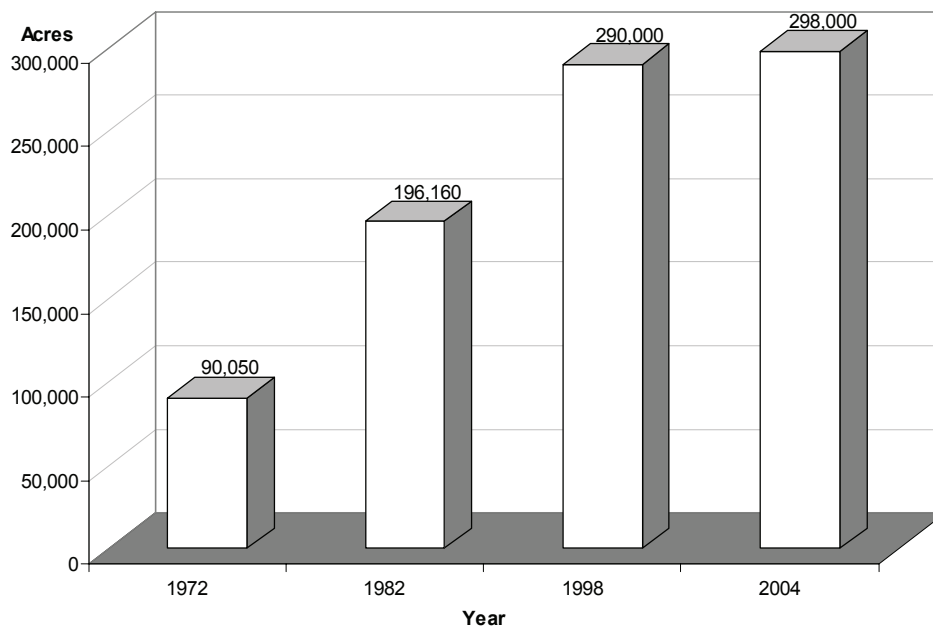
General Statistics, Highway Roadsides, 1998 & 2004

Item	Total	
	1998	2004
Number of Roadsides	1	1
Property Acres	650,000	667,000
Turf Acres	290,000	298,000
Number of Paid Workers	35	35
- Full Time	35	35
- Part Time	0	0
Value of Turf Equipment	\$31,500,000	\$35,001,000
New Turf Acres Established	2,000	2,700
Cost of Establishing New Turf	\$2,800,000	\$446,000
Capital Improvement Expense	\$0	\$0

Maintained Turf Acres

Turf acres maintained on Virginia's roadsides have steadily increased over the past 34 years. From 1982 to 1998, turf acres increased by 93,840 acres which was a 48 percent increase. Turf acres on roadsides have increased 222 percent since 1972, 52 percent since 1982, and 3 percent since 1998.

Maintained Turf Acres, Highway Roadsides Comparison Between 1972, 1982, 1998, and 2004



Turf Maintenance Expenses

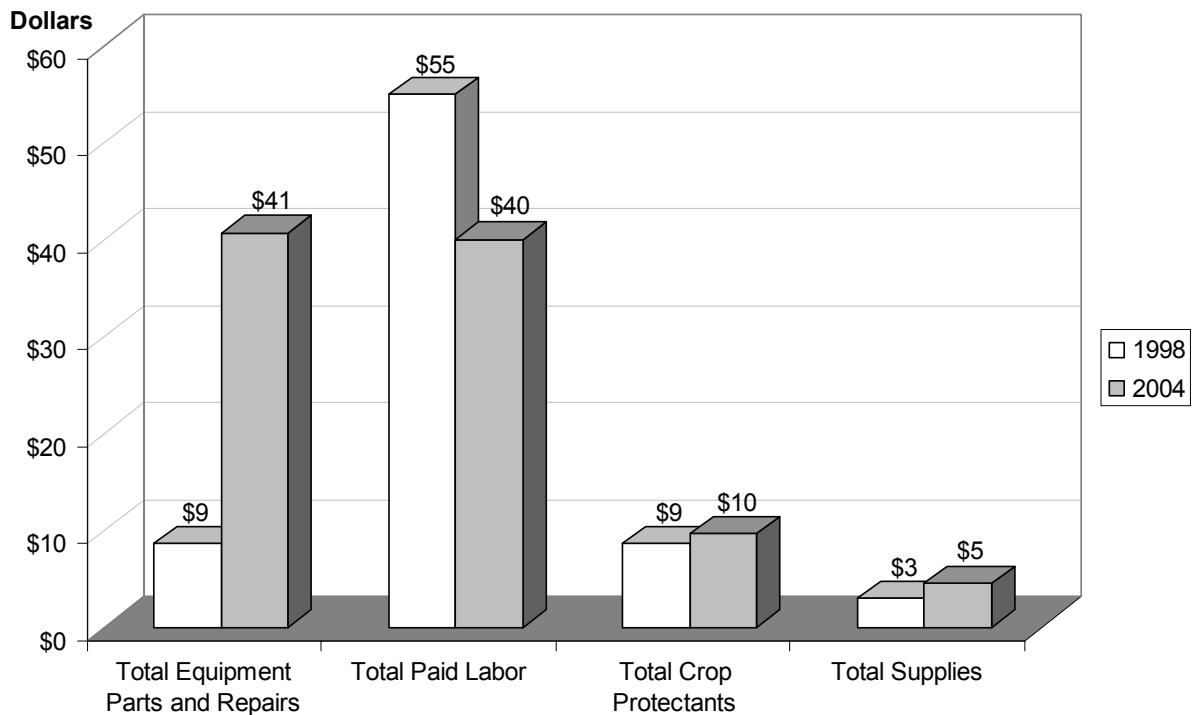
VDOT spent over \$27.5 million on turf maintenance during 2004. The largest expense was total equipment parts and repairs which almost amounted to nearly \$11.8 million, 42.9 percent of total expenses. Paid Labor and crop protectants were the next largest expenses at 42.1 and 10.2 percent.

Turf Maintenance Expenses, Highway Roadsides, 2004

Type of Expense	Total Expense		Percent of Total	
	1998	2004	1998	2004
Total Equipment Parts and Repairs	\$2,500,000	\$11,789,000	11.5%	42.9%
Total Paid Labor	\$15,925,000	\$11,592,000	73.0%	42.1%
Total Crop Protectants	\$2,503,000	\$2,800,000	11.5%	10.2%
Total Supplies	\$870,000	\$1,324,000	4.0%	4.8%
Total All Expenses	\$21,798,000	\$27,505,000	100.0%	100.0%

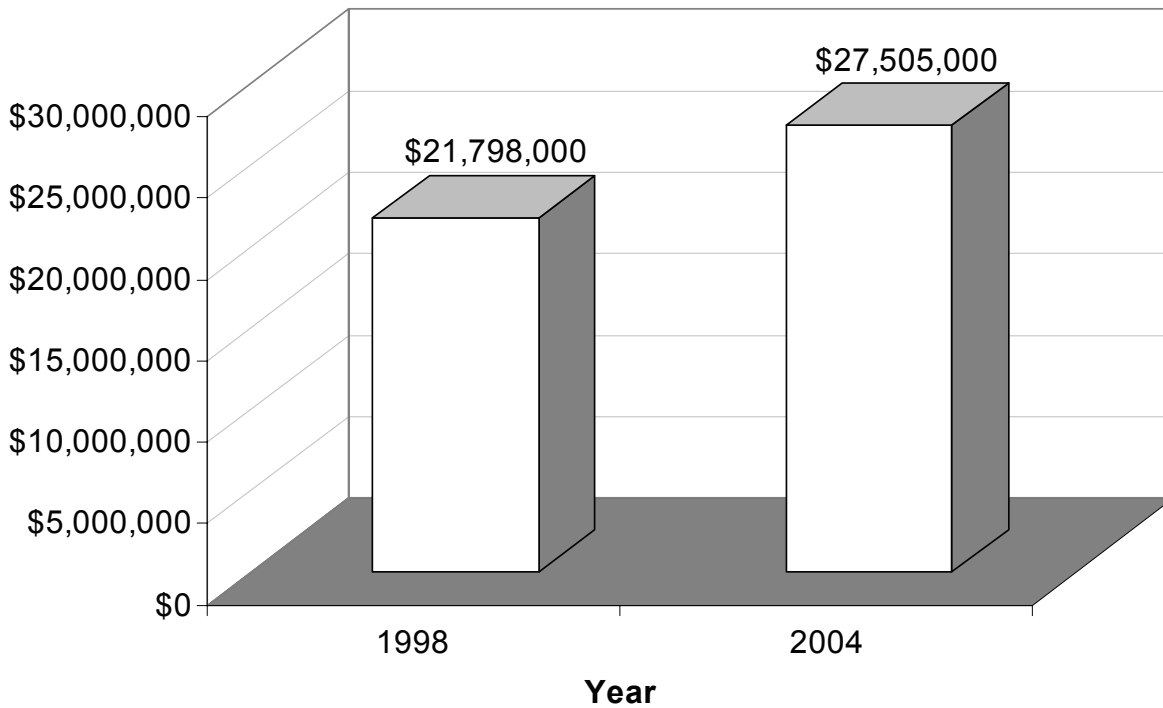
Maintenance expenses on a per acre basis totaled \$40 dollars for paid labor, \$41 for equipment parts and repairs, \$10 for crop protectants, and \$5 for supplies.

Turf Maintenance Expenses, Highway Roadsides, 1998 & 2004 Average Expenses per Acre by Type



Maintenance expenses through the years have shown a steady increase. Turf maintenance expenses increased 26 percent from 1998 to 2004.

**Turf Maintenance Expenses, Highway Roadsides, 2004
Comparison Between 1998 & 2004**



Turf Management Problems

Weeds, poor soil, labor, wear and compaction, and poor drainage were the leading problems with turf management.

**Turf Management Problems, Highway Roadsides, 2004
Percent Reporting a Specific Turf Problem**

Problem	Percent
Weeds	100%
Poor Soil	100%
Labor	100%
Wear and Compaction	100%
Poor Drainage	100%

Primary Information Source

Virginia Tech specialists, commercial technical specialists, and peers were the primary information sources for VDOT.

Primary Information Source, Highway Roadsides, 2004 Percent Reporting a Specific Information Source

Information Source	Percent
Virginia Tech Specialists	100%
Commercial Technical Specialists	100%
Peers	100%

Training

A total of 100 percent of the turfgrass professionals at VDOT attended formal training during 2004.

Percent Attending Formal Turf Maintenance or Production Training Program, Highway Roadsides, 2004

Attended Training	100%
No Training	0%
Total	100%

AIRPORTS

General Statistics

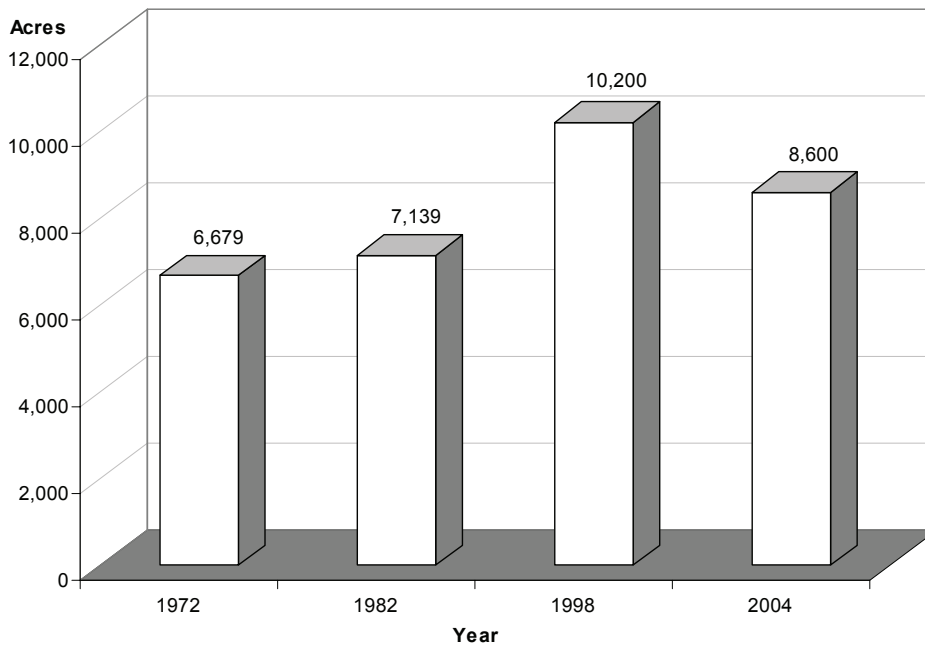
There were 68 airports in Virginia that maintained 8,600 acres of turf in 2004. Airports had 160 employees whose primary responsibility was to maintain turf. Of these 160 employees, 100 worked full time and 60 worked part time. The value of turf equipment used to maintain turf at airports in 2004 was \$6.7 million. Airports established 110 acres of new turf in 2004, at a cost of \$100,000. Capital improvement projects (i.e. drainage systems, irrigation systems, etc.) totaled \$52,000 in 2004 or \$776 per airport.

General Statistics, Airports, 1998 & 2004

ITEM	Average per Airport		Total	
	1998	2004	1998	2004
Number of Airports	-	-	64	67
Property Acres	350	306	22,400	20,500
Turf Acres	159	128	10,200	8,600
Number of Paid Workers	3.1	2.4	200	160
- Full Time	1.6	1.5	100	100
- Part Time	1.6	0.9	100	60
Value of Turf Equipment	\$30,281	\$100,776	\$1,938,000	\$6,752,000
New Turf Acres Established	0.6	1.6	40	110
Cost of Establishing New Turf	\$650 per acre	\$909 per acre	\$26,000	\$100,000
Capital Improvement Expense	\$1,391	\$776	\$89,000	\$52,000

Maintained Turf Acres

The number of turf acres maintained by airports in 2004 totaled 8,600, an average of 126 acres per airport. Turf acres have decreased 16 percent since 1998.



Turf Maintenance Expenses

Airports spent \$2,435,000 on turf maintenance during 2004. The largest expense was paid labor which amounted to \$1,765,000, nearly 73 percent of the total expenses. Equipment parts and repairs were more than 11 percent of the total turf maintenance costs and was the second largest expense in 2004. Total maintenance expenses averaged \$35,809 per airport.

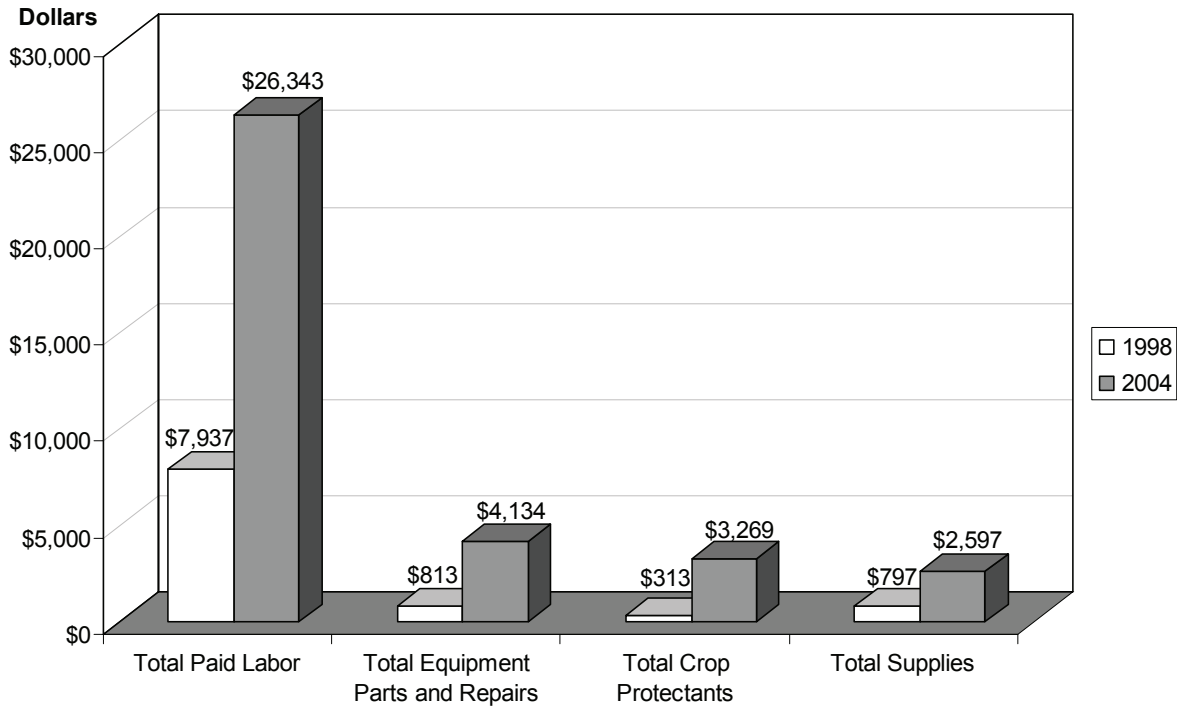
Turf Maintenance Expenses, Airports, 1998 & 2004

Type of Expense	Contract Expense		Non-Contract Expense		Total Expense		Percent of Total	
	1998	2004	1998	2004	1998	2004	1998	2004
Paid Labor:								
Mowing	\$37,000	\$118,000	\$462,000	\$1,127,000	\$499,000	\$1,245,000	79.1%	51.1%
Other Expenses	\$6,000	\$61,000	\$3,000	\$459,000	\$9,000	\$520,000	1.4%	21.4%
Total Paid Labor¹	\$43,000	\$179,000	\$465,000	\$1,586,000	\$508,000	\$1,765,000	80.5%	72.5%
Supplies:								
Fuel	\$0	\$15,000	\$20,000	\$60,000	\$20,000	\$75,000	3.2%	3.1%
Fertilizer and Seed	\$4,000	\$13,000	\$14,000	\$25,000	\$18,000	\$38,000	2.8%	1.6%
Topsoil and Mulch	\$0	\$0	\$13,000	\$27,000	\$13,000	\$27,000	2.1%	1.1%
Other Expenses	\$0	\$30,000	\$0	\$4,000	\$0	\$34,000	0.0%	1.4%
Total Supplies	\$4,000	\$58,000	\$47,000	\$116,000	\$51,000	\$174,000	8.1%	7.2%
Equipment Parts and Repairs:								
Mowing Equipment Supplies	\$1,500	\$7,000	\$8,000	\$106,000	\$9,500	\$113,000	1.5%	4.6%
Mowing Equipment Repairs	\$1,500	\$4,000	\$38,000	\$100,000	\$39,500	\$104,000	6.2%	4.3%
Other Expenses	\$0	\$6,000	\$3,000	\$54,000	\$3,000	\$60,000	0.5%	2.4%
Total Equipment Parts and Repairs	\$3,000	\$17,000	\$49,000	\$260,000	\$52,000	\$277,000	8.2%	11.3%
Crop Protectants:								
Weed Control Products	\$0	\$94,000	\$7,200	\$117,000	\$7,200	\$211,000	1.2%	8.7%
Insect Control & Disease Products	\$5,000	\$2,000	\$800	\$6,000	\$5,800	\$8,000	0.9%	0.3%
Other Expenses	\$0	\$0	\$7,000	\$0	\$7,000	\$0	1.1%	0.0%
Total Crop Protectants	\$5,000	\$96,000	\$15,000	\$123,000	\$20,000	\$219,000	3.2%	9.0%
Total Expenses	\$55,000	\$350,000	\$576,000	\$2,085,000	\$631,000	\$2,435,000	100.0%	100.0%

¹ Paid labor excludes capital improvement labor costs

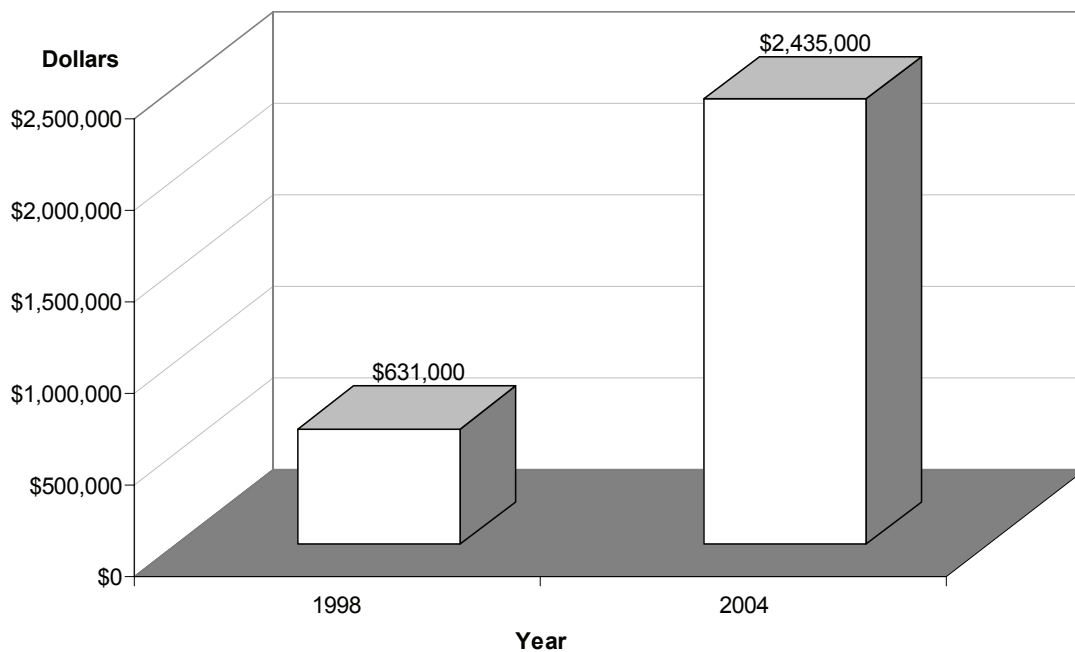
Airports spent an average of \$26,343 on paid labor, \$4,134 on equipment parts and repairs, \$3,269 on crop protectants, and \$2,597 on supplies.

Turf Maintenance Expenses, Airports, 1998 & 2004
Average Expenses per Airport by Type



Maintenance Expenses for airports have fluctuated since 1998. From 1998 to 2004, turf maintenance expenses increased 286 percent.

Turf Maintenance Expenses, Airports, 2004
Comparison Between 1998, & 2004



Out of State Expenses

A total of 10.6 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004. The largest expense was paid labor at \$179,000 and the largest percentage by type of expense was supplies at 16.1%.

Turf Maintenance Expenses Incurred to Firms and Individuals Outside Virginia, Airports, 1998 & 2004 Total Dollars and Percent by Type of Expense

Type of Expense	Total Expense		Percent	
	1998	2004	1998	2004
Paid Labor	\$600	\$179,000	0.1%	10.1%
Equipment Parts and Repairs	\$1,300	\$42,000	2.5%	15.2%
Supplies	\$600	\$28,000	1.2%	16.1%
Crop Protectants	\$0	\$8,000	0.0%	3.7%
Total	\$2,500	\$257,000	0.4%	10.6%

Turf Management Problems

Weeds and poor soil were reported as the leading turf management problems at airports. Erosion was also a top concern.

Turf Management Problems, Airports, 2004 Percent Reporting a Specific Turf Problem

Problem	Percent
Weeds	65%
Poor Soil	30%
Erosion	24%
Labor	22%
Poor Drainage	20%
Wear and Compaction	7%
Disease	4%
Insects	4%
Drought	4%
Waste Clipping Disposal	2%

Primary Information Source

County extension agents were the primary information source for people working on turf maintenance at airports.

Primary Information Source, Airports, 2004 Percent Reporting a Specific Information Source

Information Source	Percent
County Extension Agent	33%
Peers	22%
Private Consultant	17%
Commercial Technical Specialists	17%
No Source	17%
Lawn Care Co.	11%
Garden Center/Nursery	11%
Magazines	9%
College/Hort Major	9%
Virginia Tech Specialist	4%
Research Reports	4%
Newspaper	2%
TV/Radio	2%
Internet	2%

Training

A total of 15 percent of the people working on turf maintenance had attended formal training during 2004.

Percent Attending Format Turf Maintenance or Production Training Program, Airports, 2004

Attended Training	15%
No Training	85%
Total	100%

PARKS

General Statistics

The breakouts of information for parks are arranged differently than other sectors. Within the parks questionnaire, data were collected separately for “athletic fields” and “all other areas.” This allows statistics to be published for parks including athletic fields and parks excluding athletic fields. Please keep this in mind when evaluating the information contained in this section.

Including Athletic Fields

There were 193 park systems in the state of Virginia in 2004. These parks maintained 42,100 acres of turf on 216,500 total acres. The equipment used to maintain turf acreage was valued at \$63.9 million. Parks employed 1,500 full time and 1,100 part time workers for a total of 2,600. A total of 760 acres of new turf was established at a cost of nearly \$7.1 million. There was \$52.2 million worth of capital improvements (i.e. drainage systems, irrigation systems, etc.) installed in 2004.

Excluding Athletic Fields

There were 34,100 acres of maintained turf in Virginia’s parks, excluding athletic fields. The equipment used to maintain turf acreage was valued at \$44.6 million. Parks employed 1,100 full time and 800 part time workers for total of 1,900. There was \$40.9 million worth of capital improvements (i.e. drainage systems, irrigation systems, etc.) installed in 2004.

General Statistics, Parks, 1998 & 2004 Includes All Areas Within Park Systems, Including Athletic Fields

ITEM	Average per Park		Total	
	1998	2004	1998	2004
Number of Park Systems	-	-	206	193
Property Acres	652	1,122	134,400	216,500
Turf Acres	128	218	26,400	42,100
Number of Paid Workers	8.7	13.5	1,800	2,600
- Full Time	3.9	7.8	800	1,500
- Part Time	4.9	5.7	1,000	1,100
Value of Turf Equipment	\$120,947	\$331,135	\$24,915,000	\$63,909,000
New Turf Acres Established	2.4	3.9	500	760
Cost of Establishing New Turf	\$4,816 per acre	\$9,338 per acre	\$2,408,000	\$7,097,000
Capital Improvement Expense	\$115,257	\$270,663	\$23,743,000	\$52,238,000
Capital Improvement Labor Cost	¹	\$13,850	¹	\$2,673,000

¹ Not available

General Statistics, Parks, 1998 & 2004 Includes All Areas Within Park Systems, Excluding Athletic Fields

ITEM	Average per Park		Total	
	1998	2004	1998	2004
Number of Park Systems	-	-	206	193
Property Acres	652	1,122	134,400	216,500
Turf Acres	107	177	22,000	34,100
Number of Paid Workers	6.8	9.8	1,400	1,900
- Full Time	2.9	5.7	600	1,100
- Part Time	3.9	4.1	800	800
Value of Turf Equipment	\$83,117	\$231,140	\$17,122,000	\$44,610,000
Capital Improvement Expense	\$85,806	\$211,984	\$17,676,000	\$40,913,000
Capital Improvement Labor Cost	¹	\$6,642	¹	\$1,282,000

¹ Not available

Maintained Turf Acres

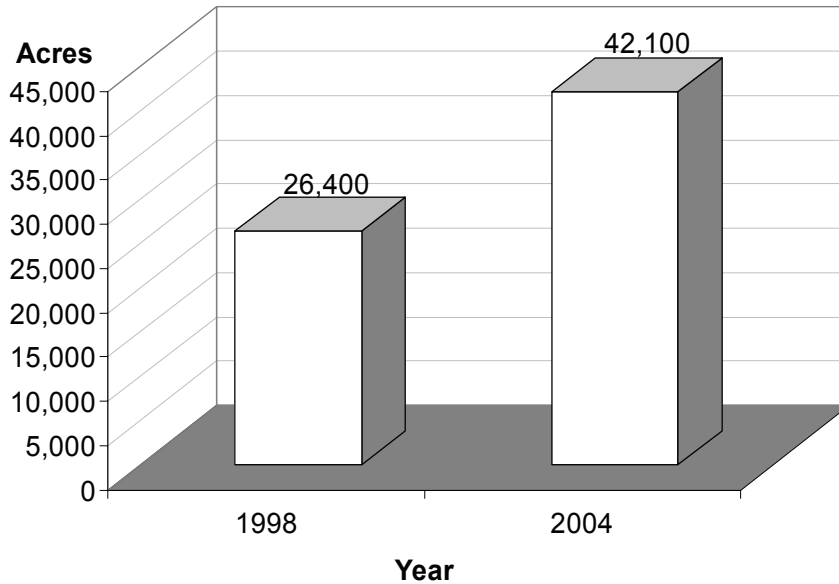
Including Athletic Fields

The number of turf acres in 2004 totaled 42,100. Turf acres have steadily increased since 1998, increasing more than 59 percent over the last 5 years.

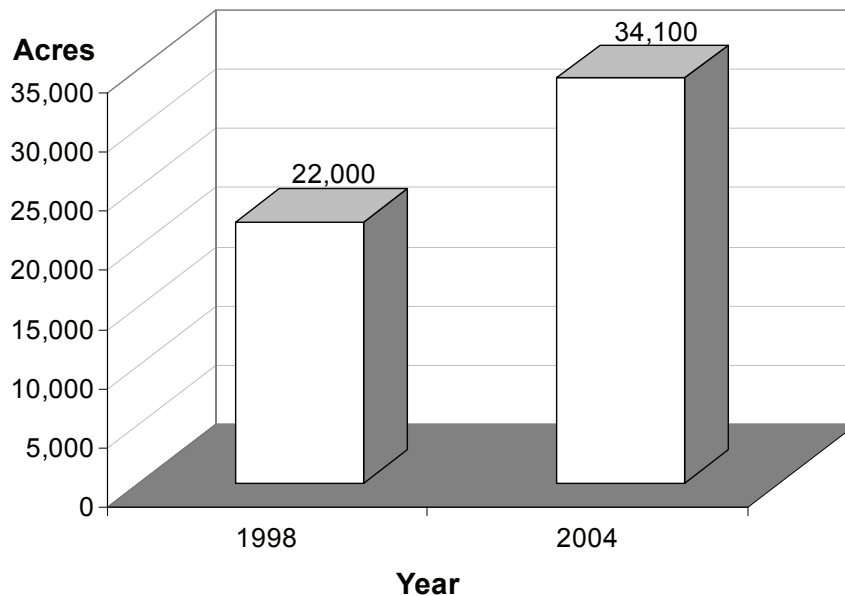
Excluding Athletic Fields

Turf acres excluding athletic fields totaled 34,100, an increase of 55 percent since 1998.

**Maintained Turf Acres, Parks
Comparison Between 1998 & 2004
All Areas, Including Athletic Fields**



**Maintained Turf Acres, Parks
Comparison Between 1998 & 2004
Excluding Athletic Fields**



Turf Maintenance Expenses

Including Athletic Fields

Turf maintenance expenses for parks totaled over \$45.5 million in 2004. The largest expense was paid labor which amounted to \$33.8 million, over 74 percent of total expenses. Equipment parts and repairs were the second largest expense at 11 percent of total turf maintenance expenses.

Excluding Athletic Fields

Turf maintenance expenses for parks totaled nearly \$31 million in 2004. The largest expense was paid labor which amounted to over \$24.8 million, more than 80 percent of total expenses. Equipment parts and repairs were the second largest expense at 12 percent of total turf maintenance expenses.

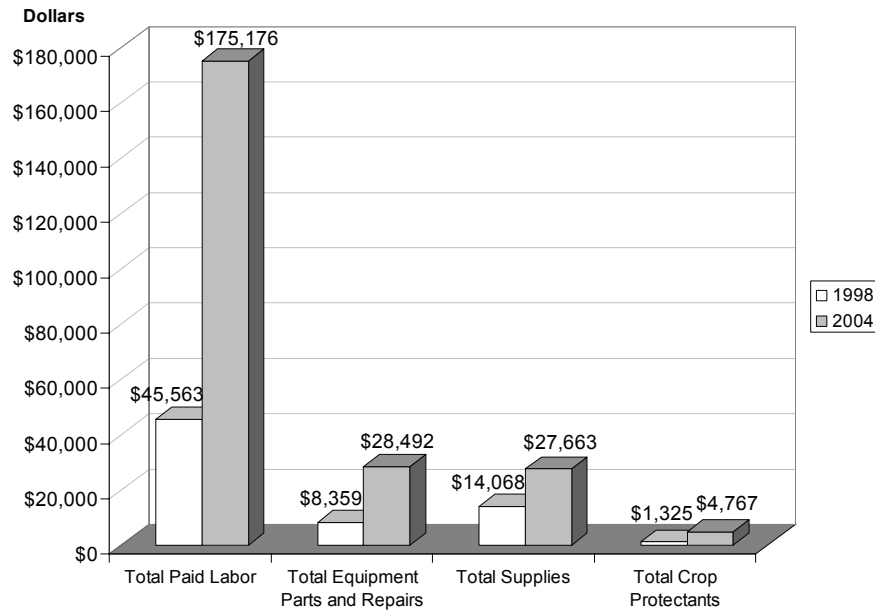
Turf Maintenance Expenses, Parks, 1998 & 2004

Type of Expense	Total Expense Including Athletic Fields		Percent of Total		Total Expense Excluding Athletic Fields		Percent of Total	
	1998	2004	1998	2004	1998	2004	1998	2004
Paid Labor:								
Mowing	\$7,465,000	\$26,620,000	52.3%	58.4%	\$5,752,000	\$18,822,000	60.7%	60.7%
Pesticide and Fertilizer Application	\$538,000	\$1,607,000	3.8%	3.5%	\$278,000	\$1,044,000	2.9%	3.4%
Other Expenses	\$1,383,000	\$5,582,000	9.6%	12.3%	\$1,115,000	\$5,009,000	11.8%	16.2%
Total Paid Labor¹	\$9,386,000	\$33,809,000	65.7%	74.2%	\$7,145,000	\$24,875,000	75.4%	80.3%
Supplies:								
Fuel	\$304,000	\$1,159,000	2.1%	2.5%	\$257,000	\$742,000	2.7%	2.4%
Fertilizer and Lime	\$832,000	\$1,560,000	5.9%	3.4%	\$560,000	\$315,000	5.9%	1.0%
Seed	\$752,000	\$667,000	5.3%	1.5%	\$515,000	\$178,000	5.4%	0.6%
Topsoil and Mulch	\$219,000	\$526,000	1.5%	1.2%	\$91,000	\$256,000	1.0%	0.8%
Other Expenses	\$791,000	\$1,427,000	5.5%	3.1%	\$28,000	\$464,000	0.3%	1.5%
Total Supplies	\$2,898,000	\$5,339,000	20.3%	11.7%	\$1,451,000	\$1,955,000	15.3%	6.3%
Equipment Parts and Repairs:								
Mowing Equipment Supplies	\$334,000	\$1,254,000	2.4%	2.8%	\$229,000	\$709,000	2.4%	2.3%
Mowing & Irrigation Equipment Repairs	\$1,290,000	\$3,751,000	9.0%	8.2%	\$471,000	\$2,684,000	5.0%	8.6%
Other Expenses	\$98,000	\$494,000	0.7%	1.1%	\$72,000	\$339,000	0.8%	1.1%
Total Equipment Parts and Repairs	\$1,722,000	\$5,499,000	12.1%	12.1%	\$772,000	\$3,732,000	8.2%	12.0%
Crop Protectants:								
Total Crop Protectants	\$273,000	\$920,000	1.9%	2.0%	\$109,000	\$422,000	1.1%	1.4%
Total Expenses	\$14,279,000	\$45,567,000	100.0%	100.0%	\$9,477,000	\$30,984,000	100.0%	100.0%

¹ Paid labor excludes capital improvement labor costs

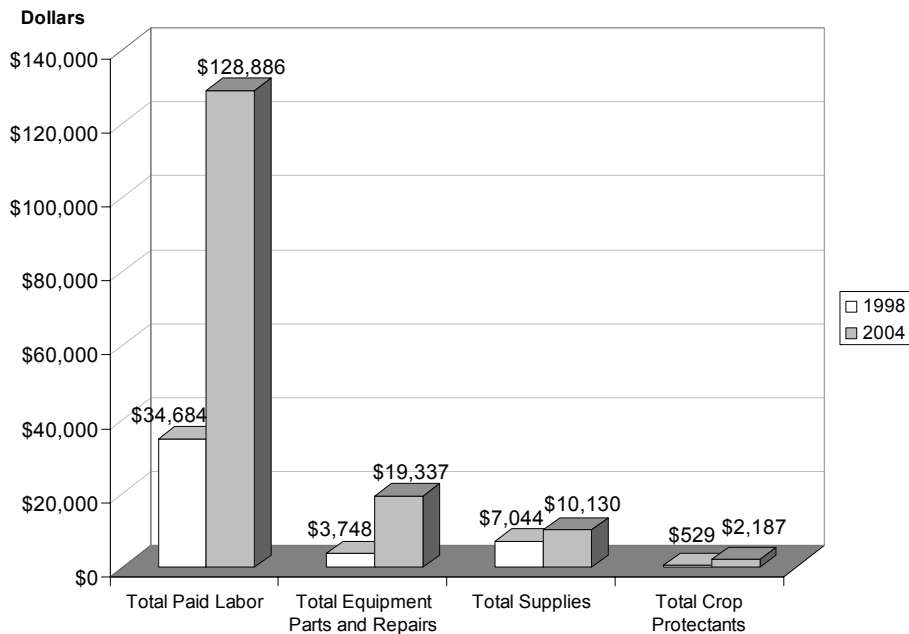
For parks including athletic field maintenance activities, the average expense for paid labor was \$175,176. Supplies averaged \$27,663, equipment parts and repairs averaged \$28,492, and crop protectants averaged \$4,767 per park system.

Turf Maintenance Expense, Parks, 1998 & 2004
Average Expense per Park System by Type
All Areas, Including Expenses on Athletic Fields

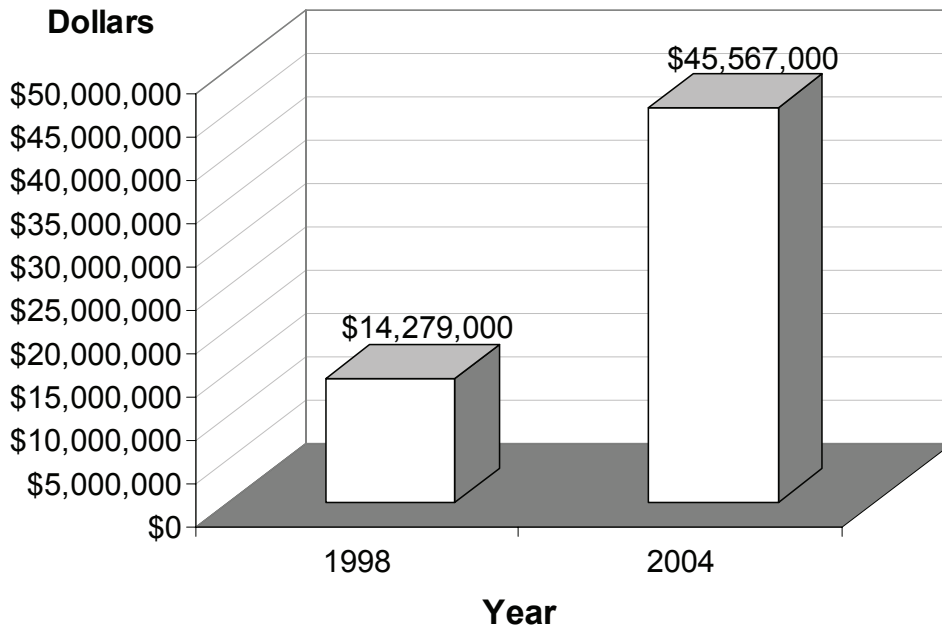


For parks excluding athletic field maintenance activities, the average expense for paid labor was \$128,886. Equipment parts and repairs averaged \$19,337, supplies averaged \$10,130, and crop protectants averaged \$2,187 per park system.

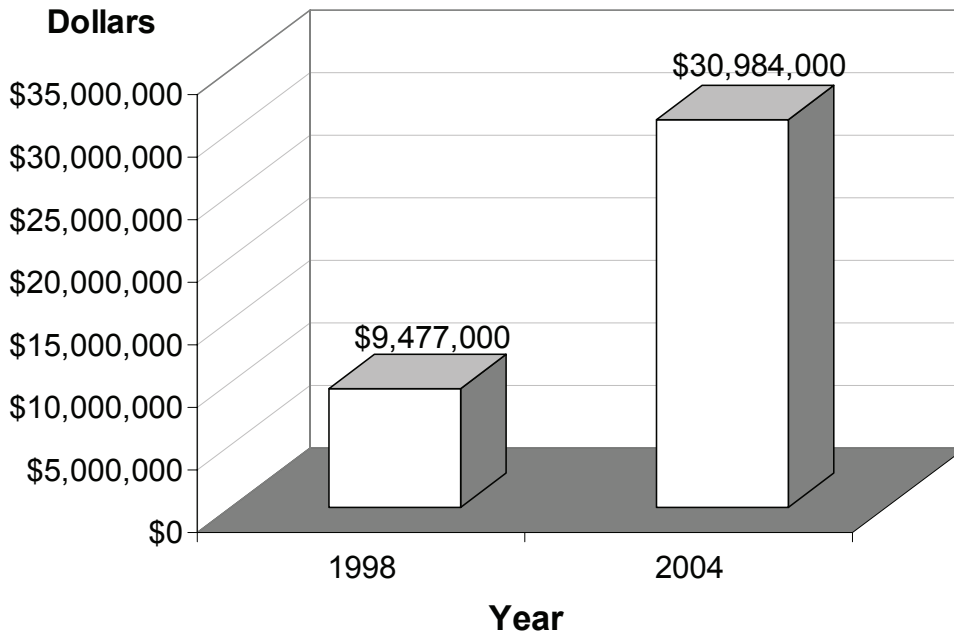
Turf Maintenance Expense, Parks, 1998 & 2004
Average Expense per Park System by Type
All Areas, Including Expenses on Athletic Fields



**Turf Maintenance Expense, Parks, 2004
Comparison Between 1998, and 2004
All Areas Including Expenses on Athletic Fields**



**Turf Maintenance Expense, Parks, 2004
Comparison Between 1998, and 2004
Excluding Expenses on Athletic Fields**



Out of State Expenses

A total of 0.3 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004. The largest was equipment parts and repairs at \$63,000.

Turf Maintenance Expenses Incurred to Firms and Individuals Outside of Virginia, Parks, 1998 & 2004 Total Dollars and Percent by Type of Expense ¹

Type of Expense	Total Expense		Percent	
	1998	2004	1998	2004
Equipment Parts and Repairs	\$96,000	\$63,000	5.6%	1.1%
Supplies	\$93,500	\$51,000	3.2%	1.0%
Crop Protectants	\$5,300	\$8,000	1.9%	0.9%
Paid Labor	\$74,600	\$2,000	0.8%	0.0%
Total	\$269,400	\$124,000	1.9%	0.3%

¹ Totals based on responses for all areas within park system, including athletic fields.

Turf Management Problems

Wear and compaction and poor soil were the leading problems for parks. Weeds were also a top concern.

Turf Management Problems, Parks, 1998 & 2004 Percent Reporting a Specific Turf Problem ¹

Problem	Percent
Wear and Compaction	64%
Weeds	52%
Poor Soil	41%
Poor Drainage	39%
Erosion	24%
Labor	23%
Disease	10%
Insects	8%
Cost/Too Expensive	7%
Shade	6%
Thatch	1%
Waste Clipping Disposal	1%
Watering	1%

¹ Totals based on responses for all areas within park system, including athletic fields.

Primary Information Source

Magazines and peers were the primary information source for parks in 2004.

Primary Information source, Parks, 2004 Percent Reporting a Specific Information Source ¹

Information Source	Percent
Magazines	43%
Peers	39%
Virginia Tech Specialist	36%
County Extension Agent	35%
Commercial Technical Specialists	24%
Lawn Care Co.	21%
Private Consultant	10%
Garden Center/Nursery	7%
No Source	6%
Research Reports	4%
Newspaper	3%
TV/Radio	2%
College/Hort Major	1%
Internet	1%
Library	1%

¹ Totals based on responses for all areas with in the park system, including athletic fields.

Training

A total of 35 percent of the people working on turf maintenance had attended formal training during 2004.

Percent Attending Format Turf Maintenance or Production Training Program, Parks, 2004 ¹

Attended Training	35%
No Training	65%
Total	100%

¹ Totals based on responses for all areas with in the park system, including athletic fields.

SCHOOLS

General Statistics

The breakouts of information for schools are arranged differently than other sectors. Within the schools questionnaire, data were collected separately for “athletic fields” and “all other areas.” This allows statistics to be published for schools including athletic fields and schools excluding athletic fields. Please keep this in mind when evaluating the information contained in this section. In 2004, there were two different samples of schools in order to obtain a more comprehensive assessment of the school sector. Schools¹ is comparable to 1998 and includes public school systems, public universities, and private universities. Schools² is a new sample which includes private K-12, pre-schools, and private religious schools.

Including Athletic Fields

There were 317 public school systems, public universities, and private universities in the state of Virginia in 2004. These schools maintained 43,300 acres of turf on 86,900 total acres. The equipment used to maintain turf acreage was valued at \$49.2 million. Schools employed 1,400 full time and 1000 part time workers for a total of 2,400. A total of 800 acres of new turf was established at a cost of \$7.6 million. There was \$14.7 million worth of capital improvements (i.e. drainage systems, irrigation systems, etc.) installed in 2004.

There were 545 private schools K-12, pre-schools, and private religious schools in the state of Virginia in 2004. These schools maintained 6,500 acres of turf on 27,500 total acres. The equipment used to maintain turf acreage was valued at over \$10.9 million. These schools employed 600 full time and 500 part time workers for a total of 1,100. A total of 60 acres of new turf was established at a cost of \$442,000.

General Statistics, Schools¹, 1998 & 2004 Includes All Areas Within Schools¹, Including Athletic Fields

Item	Average per School		Total	
	1998	2004	1998	2004
Number of schools and school systems	-	-	307	317
Property Acres	283	274	86,900	86,900
Turf Acres	141	137	43,200	43,300
Number of Paid Workers:	6.8	7.6	2,100	2,400
- Full Time	5.2	4.4	1,600	1,400
- Part Time	1.6	3.2	500	1,000
Value of Turf Equipment	\$53,443	\$155,227	\$16,407,000	\$49,207,000
New Turf Acres Established	2.3	2.5	700	800
Cost of Establishing New Turf	\$4,927 per acre	\$9,554 per acre	\$3,449,000	\$7,643,000
Capital Improvement Expense	\$1,570	\$73,927	\$482,000	\$23,435,000
Capital Improvement Labor Cost	²	\$1,767	²	\$560,000

¹ Public school systems, Public & Private universities

² Not available

General Statistics, Schools², 2004 Includes All Areas Within Schools², Including Athletic Fields

Item	Average per School	Total
	2004	2004
Number of School Systems	-	545
Property Acres	50	27,500
Turf Acres	12	6,500
Number of Paid Workers:	2.0	1,100
- Full Time	1.1	600
- Part Time	0.9	500
Value of Turf Equipment	\$20,101	\$10,955,000
New Turf Acres Established	0.1	60
Cost of Establishing New Turf	\$7,367	\$442,000
Capital Improvement Expense	\$8,165	\$4,450,000
Capital Improvement Labor Cost	\$367	\$200,000

² Private K-12, Pre-schools, Private religious schools

Excluding Athletic Fields

When you exclude athletic fields, there were 38,600 acres of maintained turf at Virginia's public school systems, private universities, and public universities in 2004. These schools employed 1,000 full time and 600 part time workers for a total of 1,600.

When you exclude athletic fields, there were 4,800 acres of maintained turf at Virginia's private schools K-12, pre-schools, and private religious schools. These schools employed 400 full time and 300 part time workers for a total of 700.

General Statistics, Schools¹, 1998 & 2004 Includes All Areas Within Schools¹, Excluding Athletic Fields

Item	Average per School		Total	
	1998	2004	1998	2004
Number of schools and school systems	-	-	307	317
Property Acres	283	274	86,900	86,900
Turf Acres	125	122	38,400	38,600
Number of Paid Workers:	5.5	5.0	1,700	1,600
- Full Time	4.2	3.2	1,300	1,000
- Part Time	1.3	1.9	400	600

¹Public school systems, Public & Private universities

General Statistics, Schools², 2004 Includes All Areas Within Schools², Excluding Athletic Fields

Item	Average per School	Total
	2004	2004
Number of School Systems	-	545
Property Acres	50	27,500
Turf Acres	9	4,800
Number of Paid Workers:	1.3	700
- Full Time	0.7	400
- Part Time	0.6	300

²Private K-12, Pre-schools, Private religious schools

Maintained Turf Acres

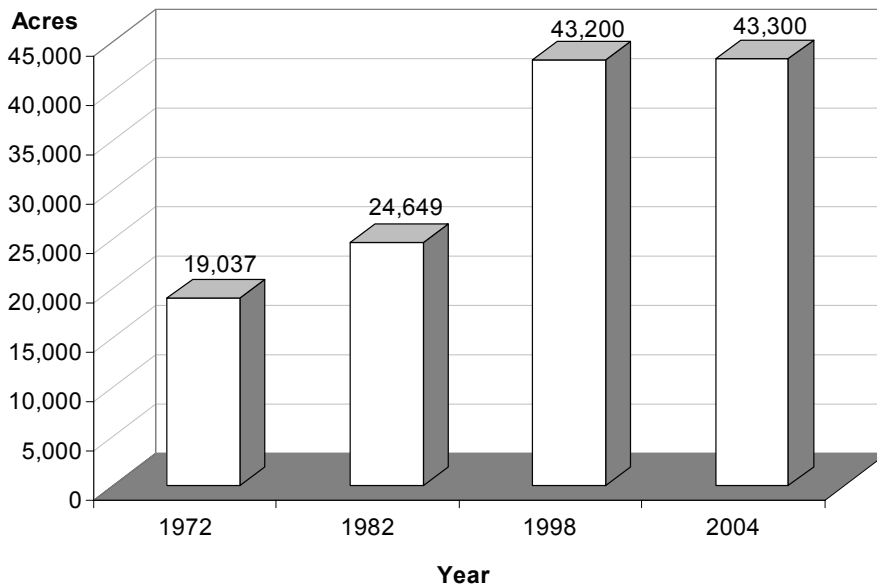
Including Athletic Fields

The number of turf acres for schools¹ in 2004 totaled 43,300. Turf acres have slightly increased from 43,200 in 1998.

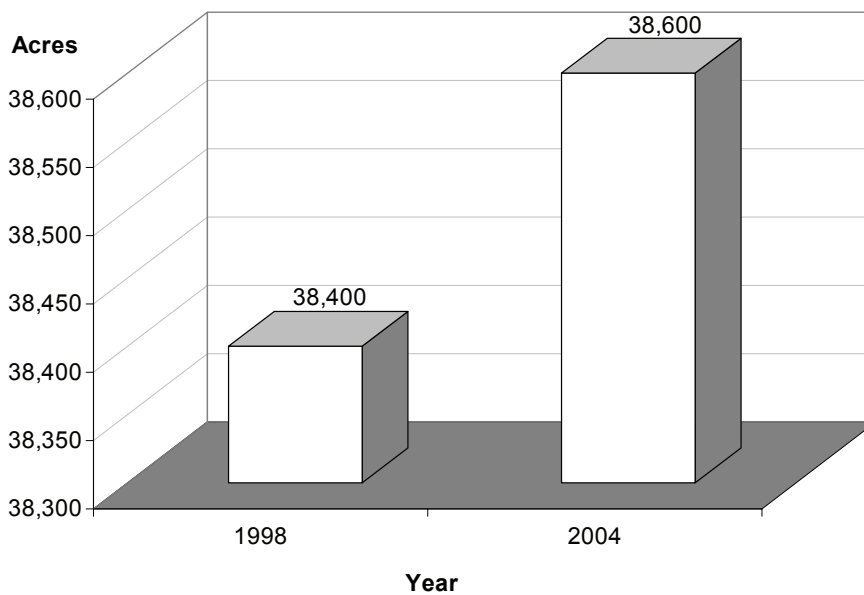
Excluding Athletic Fields

Turf acres excluding athletic fields totaled 38,600 which is a slight increase from 38,400 in 1998.

**Maintained Turf Acres, Schools¹
Comparison Between 1972, 1982, 1998, and 2004
All Areas, Including Athletic Fields**



**Maintained Turf Acres, Schools¹
Comparison Between 1998 & 2004
All Areas, Excluding Athletic Fields**



Turf Maintenance Expenses

Including Athletic Fields

Turf maintenance expenses for schools¹ totaled over \$37.4 million in 2004. The largest expense was paid labor which amounted to nearly \$27.5 million, over 73 percent of total expenses. Equipment parts and repairs were the second largest expense at 14.3 percent of total turf maintenance expenses.

Excluding Athletic Fields

Turf maintenance expenses for schools¹ totaled nearly \$28.7 million in 2004. The largest expense was paid labor which amounted to nearly \$21.7 million, over 75 percent of total expenses. Equipment parts and repairs were the second largest expense at 15.1 percent of total turf maintenance expenses.

Turf Maintenance Expenses Schools¹, 1998 & 2004

Type of Expense	Total Expense Including Athletic Fields		Percent Of Total		Total Expense Excluding Athletic Fields		Percent Of Total	
	1998	2004	1998	2004	1998	2004	1998	2004
Paid Labor:								
Mowing	\$7,171,000	\$23,406,000	37.7%	62.5%	\$5,714,000	\$19,115,000	37.3%	66.6%
Pesticide and Fertilizer Application	\$586,000	\$2,093,000	3.1%	5.6%	\$409,000	\$1,288,000	2.7%	4.5%
Other Expenses	\$6,243,000	\$1,999,000	32.8%	5.3%	\$6,162,000	\$1,541,000	40.2%	5.4%
Total Paid Labor²	\$14,000,000	\$27,498,000	73.6%	73.4%	\$12,285,000	\$21,680,000	80.1%	75.6%
Equipment Parts and Repairs:								
Mowing Equipment Supplies	\$742,000	\$2,016,000	3.9%	5.4%	\$509,000	\$1,663,000	3.3%	5.8%
Mowing and Irrigation Equipment Repairs	\$1,297,000	\$2,978,000	6.8%	8.0%	\$994,000	\$2,382,000	6.5%	8.3%
Other Expenses	\$232,000	\$377,000	1.2%	1.0%	\$207,000	\$285,000	1.3%	1.0%
Total Equipment Parts and Repairs	\$2,271,000	\$5,371,000	11.9%	14.3%	\$1,710,000	\$4,330,000	11.2%	15.1%
Supplies:								
Fuel	\$482,000	\$1,218,000	2.5%	3.3%	\$372,000	\$881,000	2.4%	3.1%
Fertilizer and Lime	\$631,000	\$834,000	3.3%	2.2%	\$329,000	\$408,000	2.1%	1.4%
Seed	\$301,000	\$438,000	1.6%	1.2%	\$150,000	\$264,000	1.0%	0.9%
Topsoil and Mulch	\$304,000	\$534,000	1.6%	1.4%	\$204,000	\$428,000	1.3%	1.5%
Other Expenses	\$388,000	\$748,000	2.1%	2.1%	\$50,000	\$182,000	0.3%	0.6%
Total Supplies	\$2,106,000	\$3,772,000	11.1%	10.1%	\$1,105,000	\$2,163,000	7.2%	7.5%
Crop Protectants:								
Total Crop Protectants	\$650,000	\$814,000	3.4%	2.2%	\$235,000	\$512,000	1.5%	1.8%
Total All Expenses	\$19,027,000	\$37,455,000	100.0%	100.0%	\$15,335,000	\$28,685,000	100.0%	100.0%

¹ Public school systems, Public & Private universities

² Paid labor excludes capital improvement labor costs

Including Athletic Fields

Turf maintenance expenses for schools² totaled nearly \$7 million in 2004. The largest expense was paid labor which amounted to \$4.8 million, over 69 percent of total expenses. Supplies were the second largest expense at 14.2 percent of total turf maintenance expenses.

Excluding Athletic Fields

Turf maintenance expenses for schools² totaled over \$4.2 million in 2004. The largest expense was paid labor which amounted to over \$3 million, which represented 72.4 percent of total expenses. Equipment parts and repairs were the second largest expense at 14.3 percent of total turf maintenance expenses.

Turf Maintenance Expenses, Schools², 2004

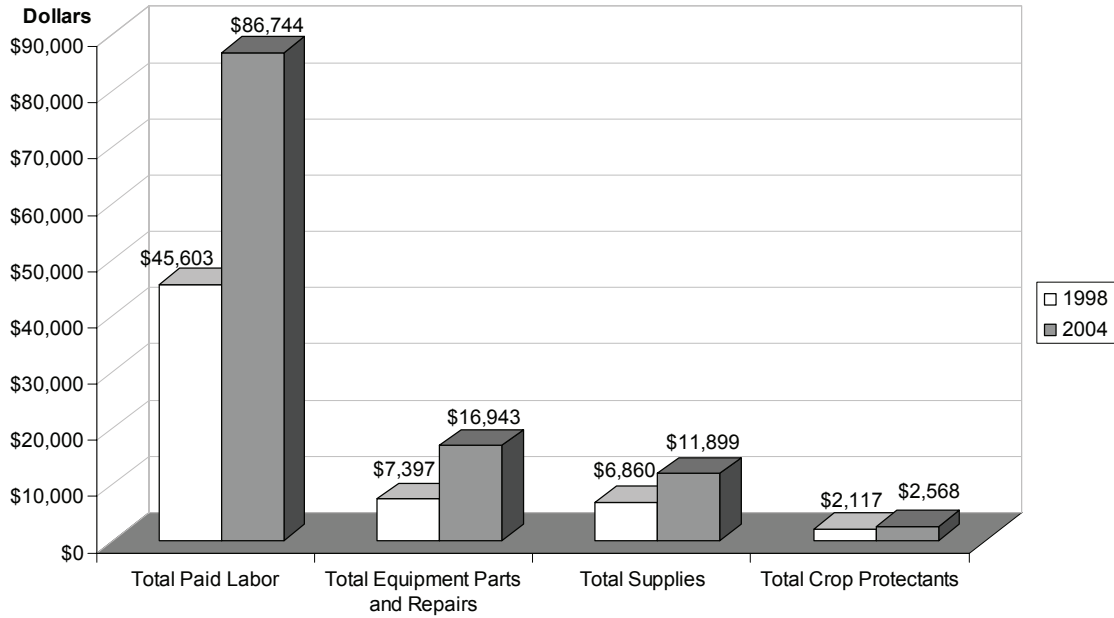
Type of Expense	Total Expense Including Athletic Fields	Percent of Total	Total Expense Excluding Athletic Fields	Percent of Total
Paid Labor:				
Mowing	\$4,152,000	59.6%	\$2,676,000	63.5%
Pesticide and Fertilizer Application	\$334,000	4.8%	\$156,000	3.7%
Other Expenses	\$350,000	5.0%	\$220,000	5.2%
Total Paid Labor¹	\$4,836,000	69.4%	\$3,052,000	72.4%
Equipment Parts and Repairs:				
Mowing Equipment Supplies	\$446,000	6.4%	\$256,000	6.1%
Mowing and Irrigation Equipment Repairs	\$390,000	5.6%	\$238,000	5.7%
Other Expenses	\$120,000	1.7%	\$105,000	2.5%
Total Equipment Parts and Repairs	\$956,000	13.7%	\$599,000	14.3%
Supplies:				
Fuel	\$166,000	2.4%	\$104,000	2.5%
Fertilizer and Lime	\$264,000	3.8%	\$61,000	1.4%
Seed	\$114,000	1.6%	\$40,000	1.0%
Topsoil and Mulch	\$254,000	3.6%	\$187,000	4.4%
Other Expenses	\$192,000	2.8%	\$86,000	2.0%
Total Supplies	\$990,000	14.2%	\$478,000	11.3%
Crop Protectants:				
Total Crop Protectants	\$187,000	2.7%	\$83,000	2.0%
Total All Expenses	\$6,969,000	100.0%	\$4,212,000	100.0%

¹ Paid labor excludes capital improvement labor costs

² Private K-12, Pre-schools, Private religious schools

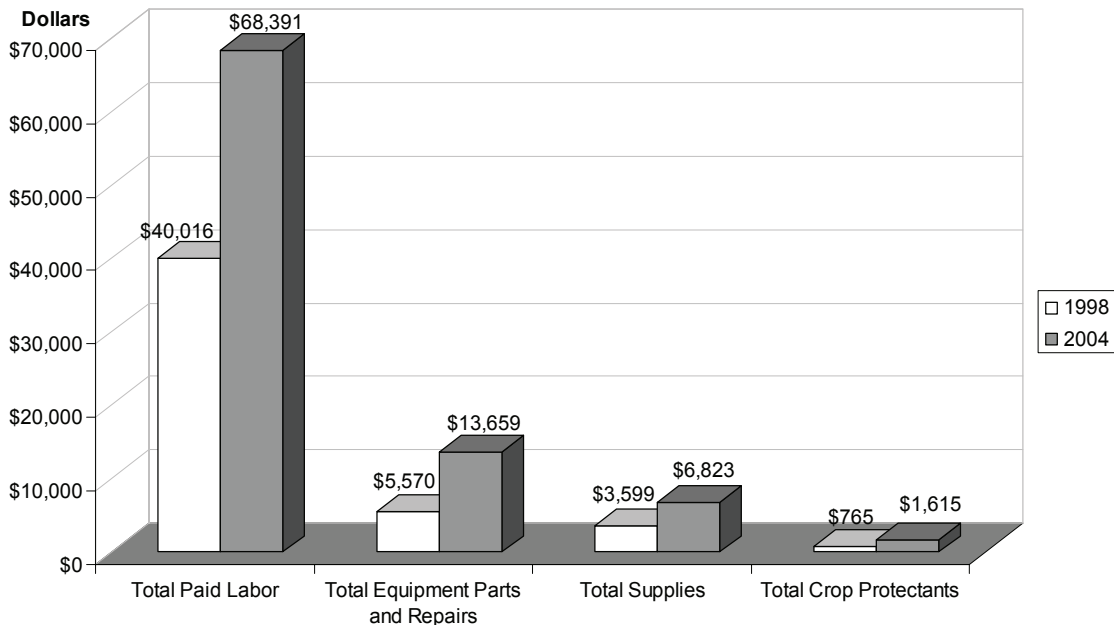
For schools¹ including athletic field maintenance activities, the average expense for paid labor was \$86,744. Equipment parts and repairs averaged \$16,943, supplies averaged \$11,899, and crop protectants averaged \$2,568 per school system.

Turf Maintenance Expenses, Schools¹, 1998 & 2004
Average Expenses by Type
All Areas, Including Expenses on Athletic Fields



For schools¹ including athletic field maintenance activities, the average expense for paid labor was \$68,391. Equipment parts and repairs averaged \$13,659, supplies averaged \$6,823, and crop protectants averaged \$1,615 per school system.

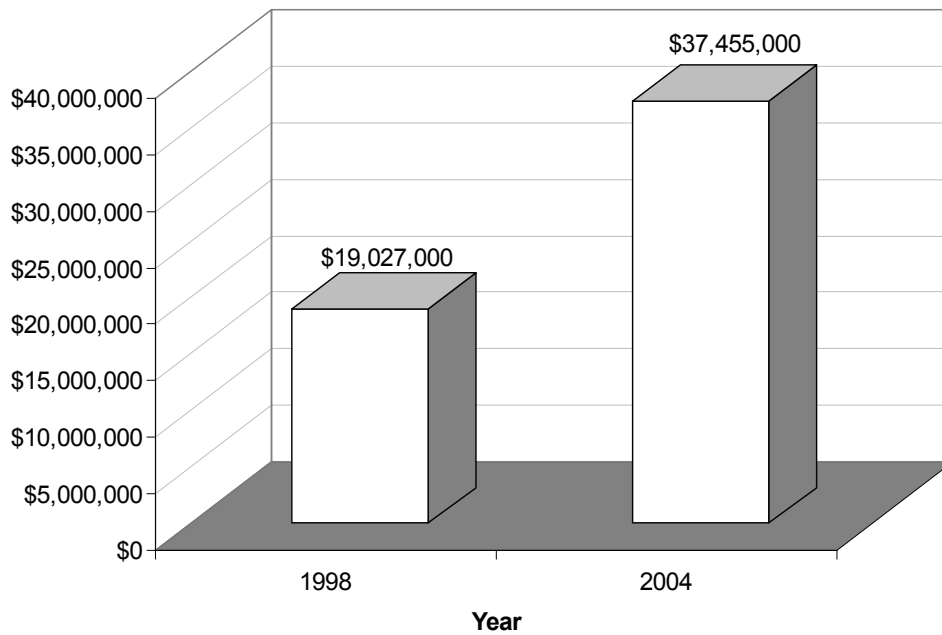
Turf Maintenance Expenses, Schools¹, 1998 & 2004
Average Expenses by Type
All Areas, Excluding Expenses on Athletic Fields



¹ Public school systems, Public & Private universities

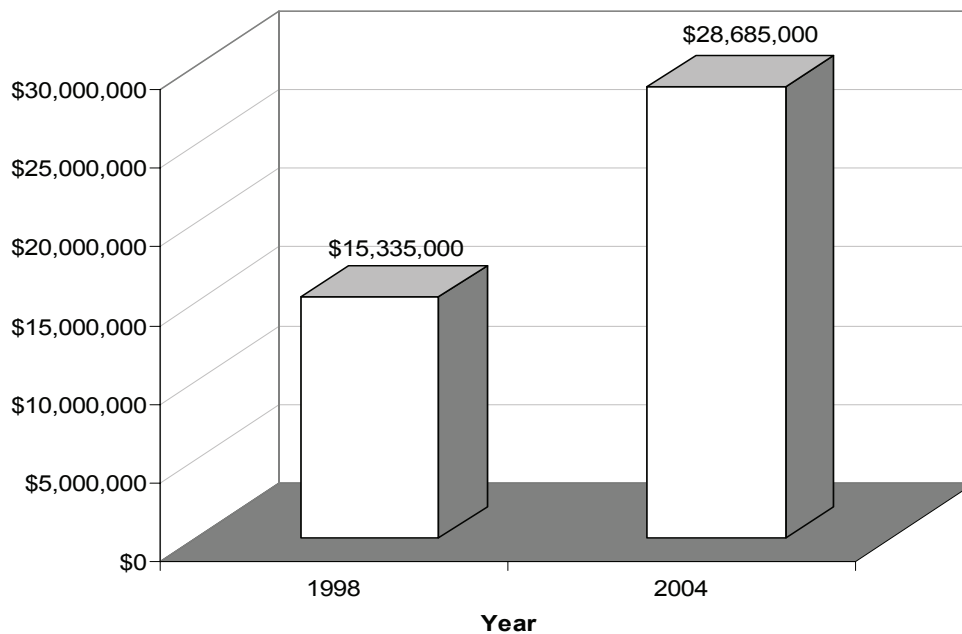
For schools¹ including athletic fields, total turf maintenance expenses increased nearly 97 percent from 1998 to 2004.

**Turf Maintenance Expenses, Schools¹, 2004
Comparison Between 1998 & 2004
All Areas, Including Expenses on Athletic Fields**



For schools¹ excluding athletic field maintenance, turf maintenance expenses increased 87 percent from 1998 to 2004.

**Turf Maintenance Expenses, Schools¹, 2004
Comparison Between 1998 & 2004
Excluding Expenses on Athletic Fields**



¹ Public school systems, Public & Private universities

Out of State Expenses

A total of 1.1 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004. The largest expense was equipment parts and repairs at \$199,000.

Turf Maintenance Expenses Incurred to Firms and Individuals Outside of Virginia, Schools¹, 2004 Total Dollars and Percent by Type of Expense ²

Type of Expense	Total Expense		Percent of Total	
	1998	2004	1998	2004
Total Equipment Parts and Repairs	\$30,300	\$199,000	1.3%	3.7%
Total Supplies	\$54,200	\$112,000	2.6%	3.0%
Total Paid Labor	\$127,000	\$103,000	0.9%	0.4%
Total Crop Protectants	\$7,000	\$15,000	1.1%	1.8%
Total All Expenses	\$218,500	\$429,000	1.1%	1.1%

¹ Public school systems, Public & Private universities

² Total dollars and percents based on turf maintenance expenses for all areas within the school system, including athletic fields.

Turf Management Problems

Wear and compaction and weeds were the leading problems for schools¹ and schools². Poor soil was also a top concern.

Turf Management Problems, Schools¹, 2004 Percent Reporting a Specific Turf Problem ³

Problem	Percent
Wear and Compaction	61%
Weeds	52%
Poor Soil	43%
Poor Drainage	36%
Labor	26%
Erosion	14%
Insects	11%
Thatch	9%
Disease	9%
Shade	8%
Waste Clipping Disposal	3%
Cost/Too Expensive	1%

Turf Management Problems, Schools², 2004 Percent Reporting a Specific Turf Problem ³

Problem	Percent
Wear and Compaction	48%
Weeds	44%
Poor Soil	26%
Poor Drainage	25%
Labor	22%
Erosion	11%
Shade	10%
Waste Clipping Disposal	9%
Insects	5%
Disease	4%
Thatch	2%
Drought	1%
Time	1%
Cost/Too Expensive	1%
Lay of the Land	1%

¹ Public school systems, Public & Private universities ² Private K-12, Pre-schools, Private religious schools

³ Percents based on all areas within the school system, including athletic fields.

Primary Information Source

County extension agents, Virginia Tech specialists, and magazines were the primary information sources for schools¹ in 2004.

Lawn care companies, garden centers/nurseries, and commercial technical specialists were the primary information sources for schools² in 2004.

**Primary Information Source, Schools¹, 2004
Percent Reporting a Specific Information Source**

Information Source	Percent
County Extension Agent	33%
Virginia Tech Specialist	33%
Magazines	31%
Commercial Technical Specialists	27%
Lawn Care Co.	25%
Garden Center/Nursery	21%
Peers	19%
Private Consultant	10%
No Source	6%
TV/Radio	2%
Other Source	2%
Newspaper	1%
Internet	1%
Library	1%

**Primary Information Source, Schools², 2004
Percent Reporting a Specific Information Source**

Information Source	Percent
Lawn Care Co.	27%
Garden Center/Nursery	22%
Commercial Technical Specialists	12%
No Source	12%
County Extension Agent	11%
Private Consultant	11%
Magazines	7%
Peers	7%
Virginia Tech Specialist	5%
TV/Radio	2%
Other Source	2%
Newspaper	2%
Internet	1%
College/Hort Major	1%

Training

A total of 29 percent of the people working on turf maintenance for schools¹ had attended formal training during 2004.

A total of 9 percent of the people working on turf maintenance for schools² had attended formal training during 2004.

**Percent Attending Formal Turf Maintenance or Production
Training Program, Schools¹, 2004³**

Attended Training	29%
No Training	71%
Total	100%

**Percent Attending Formal Turf Maintenance or Production
Training Program, Schools², 2004³**

Attended Training	9%
No Training	91%
Total	100%

¹ Public school systems, Public & Private universities ² Private K-12, Pre-schools, Private religious schools

³ Percents based on all areas within the school system, including athletic fields.

HOME LAWN

General Statistics

There were 2,321,787¹ single family homes in Virginia. The home lawn sector accounted for 1,048,000 acres of maintained turf from a total of 3,956,000 property acres. The value of turf equipment used to maintain turf totaled \$4.1 billion. A total of 33,800 acres of new turf was established in 2004, at a cost of nearly \$134.3 million. Capital improvement projects (i.e. drainage systems, irrigations systems, etc.) totaled more than \$1.1 million in 2004 or \$489 per home lawn. The home lawn sector accounted for 378,400 workers. These workers were paid family members or neighbors hired for turf maintenance activities. The value of unpaid labor totaled more than \$1.2 billion in 2004. Homeowners and renters worked nearly 234 million hours on turf maintenance activities.

General Statistics, Home Lawns, 1998, and 2004

Item	Average Per Area		Total	
	1998	2004	1998	2004
Number of Home Lawns ¹	-	-	2,035,700	2,321,787
Property Acres	1.13	1.70	2,306,000	3,956,000
Turf Acres	0.35	0.45	714,000	1,048,000
Number of Paid Workers	0.16	0.16	332,000	378,400
Value of Turf Equipment	\$1,145	\$1,772	\$2,331,309,000	\$4,113,637,000
New Turf Acres Established	0.02	0.01	37,700	33,800
Cost of Establishing New Turf	\$3,409 per acre	\$3,972 per acre	\$128,530,000	\$134,253,000
Capital Improvement Expense	\$256	\$489	\$521,365,000	\$1,135,994,000
Capital Improvement Labor Cost	³	\$15	³	\$35,427,000
Number of Hours of Unpaid Family Labor	110.5	100.7	224,985,000	233,831,000
- Mowing Hours	61.4	56.4	125,074,000	130,943,000
- Other Hours	49.1	44.3	99,912,000	102,888,000
Value of Unpaid Labor ²	\$591	\$539	\$1,203,675,100	\$1,250,998,000

¹ 2004 population from the 2004 American Community Survey, Virginia: Selected Housing Characteristics

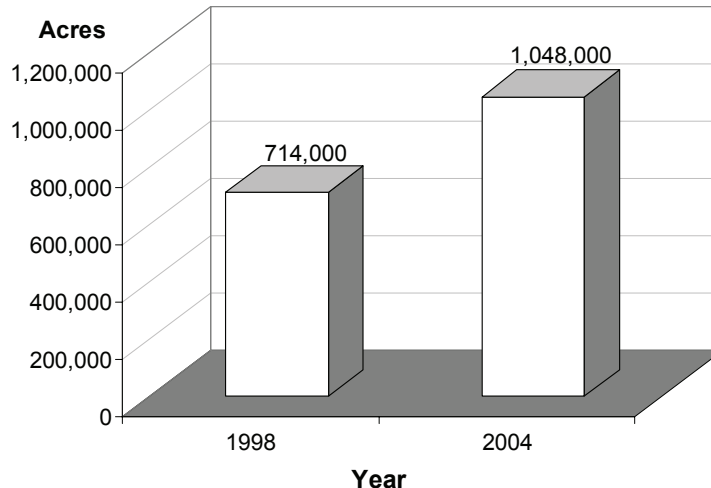
² Used \$5.35 per hour to complete value of unpaid labor

³ Not available

Maintained Turf Acres

The number of turf acres in 2004 totaled 1,048,000 or 1.7 acres per home lawn. From 1998 to 2004 there was a 47 percent increase in turf acres.

Maintained Turf Acres, Home Lawns Comparison Between 1998 & 2004



Turf Maintenance Expenses

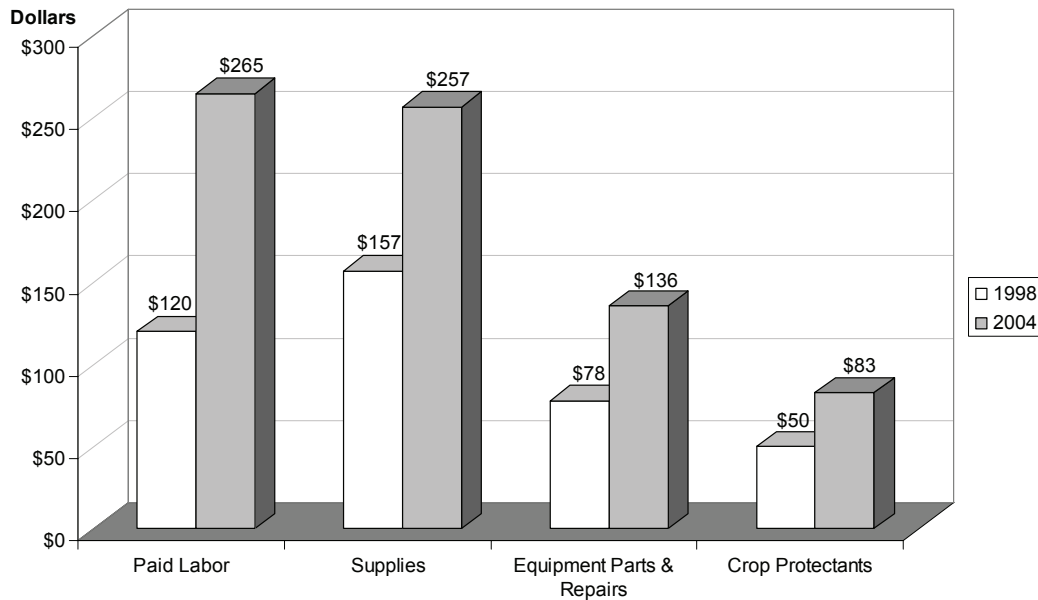
A total of over \$1.7 billion was spent on turf maintenance activities in 2004. The largest expense was paid labor which accounted for nearly \$616.2 million and was over 35 percent of the total expenses. Supplies were 34.7 percent of the total turf maintenance expense and were the second largest expense in 2004. Total maintenance expenses averaged \$741 per home lawn.

Type of Expense	Contract Expense		Non-Contract Expense		Total Expense		Percent of Total	
	1998	2004	1998	2004	1998	2004	1998	2004
Paid Labor:								
Mowing	\$140,142,000	\$280,443,000	\$46,690,000	\$110,285,000	\$186,832,000	\$390,728,000	22.6%	22.7%
Pesticide & Fertilizer Application	\$35,347,000	\$92,838,000	\$3,406,000	\$23,148,000	\$38,753,000	\$115,986,000	4.7%	6.7%
Other Expenses	\$13,381,000	\$86,151,000	\$5,376,000	\$23,332,000	\$18,757,000	\$109,483,000	2.3%	6.4%
Total Paid Labor¹	\$188,870,000	\$459,432,000	\$55,472,000	\$156,765,000	\$244,342,000	\$616,197,000	29.6%	35.8%
Supplies:								
Water	\$1,540,000	\$8,425,000	\$84,423,000	\$102,129,000	\$85,963,000	\$110,554,000	10.4%	6.4%
Fuel	\$261,000	\$3,021,000	\$37,919,000	\$76,928,000	\$38,180,000	\$79,949,000	4.6%	4.7%
Fertilizer and Lime	\$7,644,000	\$24,400,000	\$67,002,000	\$104,839,000	\$74,646,000	\$129,239,000	9.1%	7.5%
Seed	\$1,606,000	\$9,461,000	\$33,377,000	\$52,884,000	\$34,983,000	\$62,345,000	4.2%	3.6%
Topsoil	\$3,441,000	\$4,886,000	\$16,518,000	\$23,494,000	\$19,959,000	\$28,380,000	2.4%	1.7%
Mulch	\$8,806,000	\$33,469,000	\$45,529,000	\$93,941,000	\$54,335,000	\$127,410,000	6.6%	7.4%
Other Expenses	\$3,543,000	\$15,948,000	\$7,556,000	\$42,488,000	\$11,099,000	\$58,436,000	1.4%	3.4%
Total Supplies	\$26,841,000	\$99,610,000	\$292,324,000	\$496,703,000	\$319,165,000	\$596,313,000	38.7%	34.7%
Equipment Parts & Repairs:								
Mowing Equipment Supplies	\$2,176,000	\$6,638,000	\$62,121,000	\$122,471,000	\$64,297,000	\$129,109,000	7.8%	7.5%
Mowing Equipment Repairs	\$7,672,000	\$10,526,000	\$40,611,000	\$80,959,000	\$48,283,000	\$91,485,000	5.8%	5.3%
Irrigation Equipment Repairs	\$1,520,000	\$7,750,000	\$10,537,000	\$30,530,000	\$12,057,000	\$38,280,000	1.5%	2.2%
Tools	\$530,000	\$1,576,000	\$31,127,000	\$52,403,000	\$31,657,000	\$53,979,000	3.8%	3.1%
Other Expenses	\$1,176,000	\$690,000	\$2,152,000	\$2,244,000	\$3,328,000	\$2,934,000	0.4%	0.2%
Total Equipment Parts & Repairs	\$13,074,000	\$27,180,000	\$146,548,000	\$288,607,000	\$159,622,000	\$315,787,000	19.3%	18.3%
Crop Protectants:								
Weed Control Products	\$10,806,000	\$29,716,000	\$38,613,000	\$69,644,000	\$49,419,000	\$99,360,000	6.0%	5.8%
Insect Control Products	\$7,069,000	\$23,455,000	\$19,379,000	\$36,781,000	\$26,448,000	\$60,236,000	3.2%	3.5%
Disease Control Products	\$3,967,000	\$9,807,000	\$9,694,000	\$13,175,000	\$13,661,000	\$22,982,000	1.7%	1.3%
Other Expenses	\$11,086,000	\$7,725,000	\$1,376,000	\$2,159,000	\$12,462,000	\$9,884,000	1.5%	0.6%
Total Crop Protectants	\$32,928,000	\$70,703,000	\$69,062,000	\$121,759,000	\$101,990,000	\$192,462,000	12.4%	11.2%
Total Expenses	\$261,713,000	\$656,925,000	\$563,406,000	\$1,063,834,000	\$825,119,000	\$1,720,759,000	100.0%	100.0%

¹ Paid labor excludes capital improvement labor costs

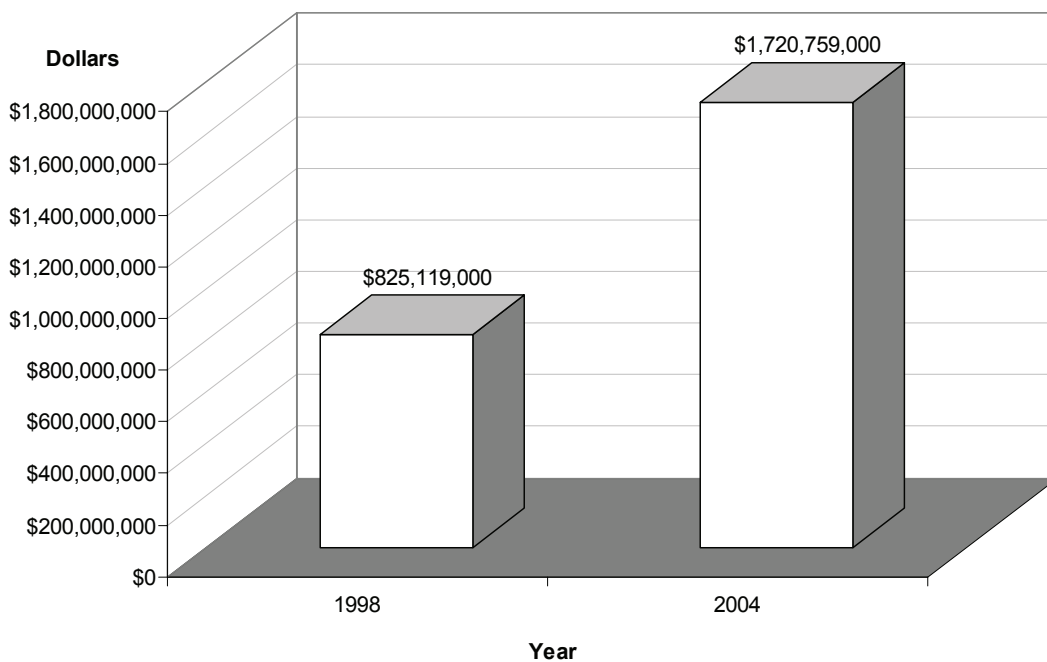
The home lawn sector spent an average of \$265 on paid labor, \$257 on supplies, \$136 on equipment parts and repairs, and \$83 on crop protectants.

Turf Maintenance Expenses, Home Lawns, 1998 & 2004
Average Expenses per Home Lawn by Type



Maintenance expenses on home lawns dramatically increased from 1998 to 2004. Part of this increase can be attributed to more home lawns accounting for more total turf acres within Virginia in 2004. There were 714,000 turf acres in 1998 and 1,048,000 turf acres in 2004, a 47 percent increase over that time span. Another reason is the increase in use of lawn service companies by homeowners. Contract expenses in 2004 accounted for over 38 percent of all turf maintenance expenses for home lawns.

Turf Maintenance Expenses, Home Lawns, 2004
Comparison Between 1998 & 2004



Out of State Expenses

A total of 1.3 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004. The largest expense was paid labor at nearly \$8.6 million.

Turf Maintenance Expenses Incurred to Firms and Individuals Outside of Virginia, Home Lawns, 1998 & 2004 Total Dollars and Percent by Type of Expense

Type of Expense	Total Expense		Percent	
	1998	2004	1998	2004
Equipment, Parts, and Repairs	\$4,383,800	\$8,120,000	2.7%	2.6%
Paid Labor	\$3,894,800	\$8,592,000	1.6%	1.4%
Crop Protectants	\$1,326,100	\$1,998,000	1.3%	1.0%
Supplies and Other Expenses	\$4,298,900	\$4,205,000	1.3%	0.7%
Total	\$13,903,600	\$22,915,000	1.7%	1.3%

Turf Management Problems

Weeds and poor soil were the leading problems for home lawns. Shade was also a top concern.

Turf Management Problems, Home Lawns, 2004 Percent Reporting a Specific Turf Problem

Problem	Percent
Weeds	68%
Poor Soil	37%
Shade	26%
Poor Drainage	21%
Insects	19%
Wear and Compaction	12%
Thatch	12%
Labor	12%
Disease	11%
Erosion	10%
Waste Clipping Disposal	8%
Drought	4%
Animals/Rodents	1%

Primary Information Source

Garden center/nursery, peers, magazines, and newspapers were the primary information sources for the home lawn sector in 2004.

Primary Information Source, Home Lawns, 2004 Percent Reporting a Specific Information Source

Information Source	Percent
Garden Center/Nursery	42%
Peers	26%
Magazines	23%
Newspaper	19%
Lawn Care Co.	16%
TV/Radio	14%
No Source	13%
County Extension Agent	8%
Commercial Technical Specialists	6%
College/Horticulture Major	6%
Virginia Tech Specialist	3%
Private Consultant	2%
Internet	2%
Other Source	1%
Library	1%

Training

A total of only 1 percent of people maintaining home lawns had attended any formal training during 2004.

Percent Attending Formal Turf Maintenance or Production Training Program, Home Lawns, 2004

Attended Training	1%
No Training	99%
Total	100%

LAWN SERVICE COMPANIES

General Statistics

Lawn service companies accounted for 772,000 service accounts in 2004. Annual gross receipts from these accounts totaled \$724.5 million, an average of \$939 per account. Service companies employed 9,000 full time workers and 5,000 part time workers for a total of 14,000 employees. The value of turf equipment owned or leased by lawn service companies totaled over \$281 million in 2004. Service companies established 12,400 acres of new turf at a cost of \$66.2 million. A total of \$49.2 million was spent on capital improvements (i.e. drainage systems, irrigation systems, etc.) in 2004.

General Statistics, Lawn Service Companies, 1998 & 2004

Item	Average per Company		Total	
	1998	2004	1998	2004
Number of Firms	-	-	2,205	2,063
Peak Number of Service Accounts	346	374	764,000	772,000
Annual Gross Receipts:	\$888 per account	\$939 per account	\$678,505,000	\$724,522,000
Gross Receipts Earned in Virginia	\$870 per account	\$874 per account	\$664,715,000	\$674,635,000
Gross Receipts Earned Outside Virginia	\$18 per account	\$65 per account	\$13,790,000	\$49,887,000
Number of Paid Workers:	6.9	6.8	15,300	14,000
- Number of Full Time Workers	4.2	4.4	9,300	9,000
- Number of Part Time Workers	2.7	2.4	6,000	5,000
Value of Turf Equipment	\$84,795	\$136,283	\$186,972,000	\$281,152,000
New Turf Acres Established	21	6	47,000	12,400
Cost of Establishing New Turf	\$2,192 per acre	\$5,343 per acre	\$103,030,000	\$66,258,000
Capital Improvement Expense	\$11,596	\$23,869	\$25,570,000	\$49,242,000
Capital Improvement Labor Cost	¹	\$3,846	¹	\$7,934,000

¹ Not available

Turf Maintenance Expenses

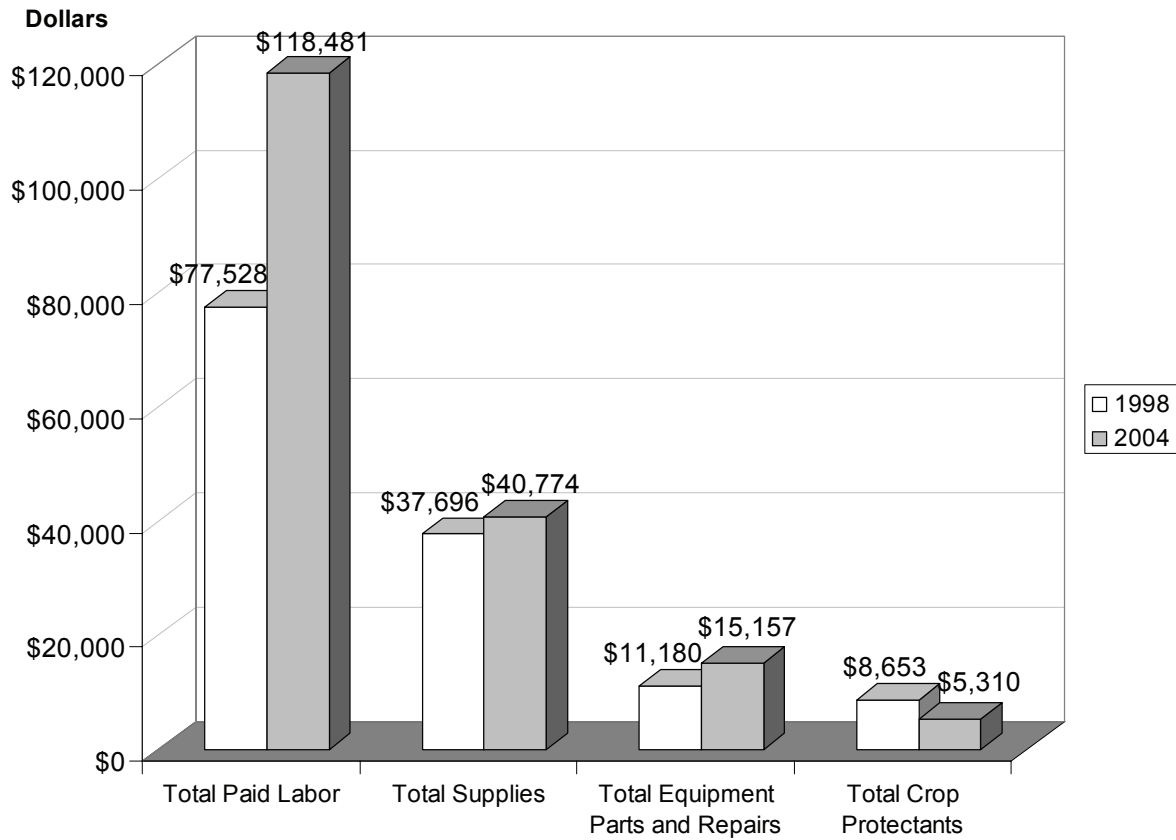
Lawn service companies spent over \$370 million on turf maintenance during 2004. The largest expense was labor which totaled over \$244.4 million and accounted for nearly 66 percent of the total maintenance expenses. Supplies were the second largest expense accounting for 22.6 percent of the total maintenance expenses.

Type of Expense	Total Expense		Percent of Total	
	1998	2004	1998	2004
Paid Labor:				
Mowing	\$107,733,000	\$145,456,000	36.2%	39.2%
Pesticide Application	\$26,547,000	\$22,959,000	8.9%	6.2%
Fertilizer Application	\$17,554,000	\$20,439,000	5.9%	5.5%
Other Expenses	\$19,116,000	\$55,572,000	6.4%	15.0%
Total Paid Labor ¹	\$170,950,000	\$244,426,000	57.4%	65.9%
Supplies:				
Fuel	\$19,064,000	\$22,349,000	6.4%	6.0%
Fertilizer	\$21,726,000	\$12,965,000	7.3%	3.5%
Lime	\$4,495,000	\$4,881,000	1.5%	1.3%
Seed	\$22,110,000	\$8,232,000	7.4%	2.2%
Sod, Sprigs	\$3,849,000	\$7,815,000	1.3%	2.1%
Topsoil and Mulch	\$7,464,000	\$13,658,000	2.5%	3.7%
Other Expenses	\$4,411,000	\$14,216,000	1.5%	3.8%
Total Supplies	\$83,119,000	\$84,116,000	27.9%	22.6%
Equipment Parts and Repairs:				
Mowing Equipment Supplies	\$9,817,000	\$9,538,000	3.3%	2.6%
Mowing Equipment Repairs	\$9,356,000	\$9,877,000	3.1%	2.7%
Other Expenses	\$5,480,000	\$11,854,000	1.9%	3.2%
Total Equipment Parts and Repairs	\$24,653,000	\$31,269,000	8.3%	8.5%
Crop Protectants:				
Weed, Insect, and Disease Control Products	\$16,375,000	\$10,106,000	5.5%	2.7%
Other Expenses	\$2,704,000	\$848,000	0.9%	0.3%
Total Crop Protectants	\$19,079,000	\$10,954,000	6.4%	3.0%
Total Expenses	\$297,801,000	\$370,765,000	100.0%	100.0%

¹ Paid labor excludes capital improvement labor costs

Paid labor and supplies accounted for the largest average expenses at \$118,481 per firm and \$40,774 per firm, respectively. Average expenses for equipment parts and repairs were \$15,157 per firm and an average of \$5,310 was spent on crop protectants.

Turf Maintenance Expenses, Lawn Service Companies, 1998 & 2004
Average Expenses per Company by Type



Out of State Expenses

A total of 9.1 percent of all turf maintenance expenses was incurred to firms and individuals outside Virginia in 2004. The largest expense was paid labor at nearly \$21.4 million.

Turf Maintenance Expenses Incurred to Firms and Individuals Outside of Virginia, Lawn Service Companies, 1998 & 2004 Total Dollars and Percent by Type of Expense

Type of Expense	Total Expense		Percent	
	1998	2004	1998	2004
Paid Labor	\$8,402,000	\$21,365,000	4.9%	8.7%
Supplies	\$16,733,000	\$7,221,000	20.1%	8.6%
Equipment Parts and Repairs	\$12,365,000	\$4,665,000	50.2%	14.9%
Crop Protectants	\$6,445,000	\$1,329,000	33.8%	12.1%
Total	\$43,945,000	\$34,580,000	14.8%	9.3%

Turf Management Problems

Lawn service companies reported the leading problems in turf management were weeds, labor, and poor soil. Poor drainage and shade were also top concerns.

Turf Management Problems, Lawn Service Companies, 2004 Percent Reporting a Specific Turf Problem

Problem	Percent
Weeds	55%
Labor	55%
Poor Soil	46%
Poor Drainage	33%
Shade	32%
Wear and Compaction	29%
Erosion	19%
Disease	18%
Waste Clipping Disposal	14%
Insects	8%
Thatch	5%

Primary Information Source

Magazines, commercial technical specialists, peers, and county extension agents were the primary information sources used by lawn service companies.

Primary Information Source, Lawn Service Companies, 2004 Percent Reporting a Specific Information Source

Information Source	Percent
Magazines	48%
Commercial Technical Specialists	42%
Peers	40%
County Extension Agent	36%
Virginia Tech Specialist	34%
Garden Center/Nursery	25%
Lawn Care Co.	19%
Private Consultant	6%
No Source	6%
Internet	4%
Other Source	4%
Newspaper	2%
College/Hort Major	2%
TV/Radio	1%
Library	1%

Training

A total of 58 percent of the workers at lawn service companies had attended formal training during 2004.

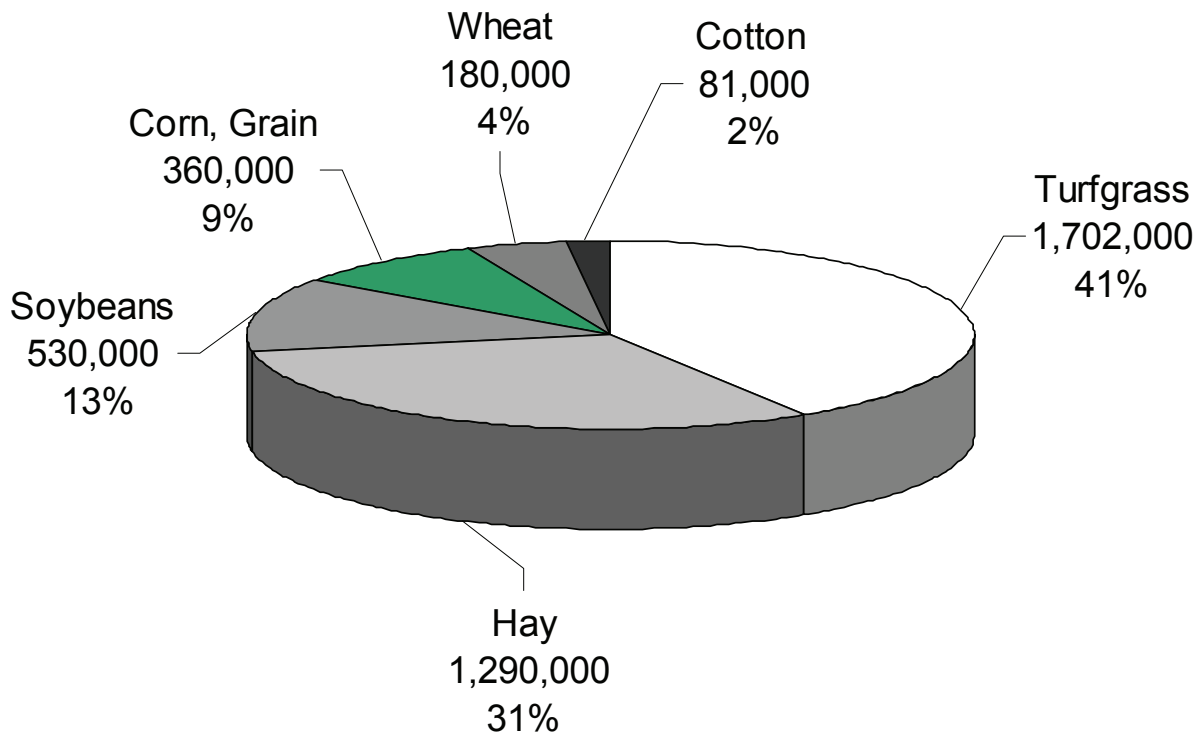
Percent Attending Formal Turf Maintenance or Production Training Program, Lawn Service Companies, 2004

Attended Training	42%
No Training	58%
Total	100%

Turfgrass Total Acreage

Turfgrass acreage accounted for 41 percent of the total acres when compared to the states top five field crops in 2004. Turfgrass acreage has steadily increased since 1998 and still accounts for more acreage than hay or soybeans.

**Turfgrass Acreage, 2004
Comparison Between Virginia's Top Five Field Crops**



Survey Methodology and Procedures

Survey Objective

The objective of the survey was to provide basic statistics that describe each of the individual industry segments for the following items:

Number of hired workers	Paid labor expenses
Value of unpaid family labor	Maintained acreage of turf
Equipment expenses	Capital improvement expenses
Non-equipment expenses	

In addition to these basic statistics, there were 11 different industry segments identified that were important to include. They were:

Home Lawns	General Areas	Churches
Highway Roadsides	Airports	Parks
Golf Courses	Schools	Sod Farms
Cemeteries	Service Companies	

The information above was defined as “core” data and keeps the survey comparable with the previous 1998 survey. Please note that the information in this report is statistically reliable for each of the 11 industry segments. Care needs to be taken when saying anything about the entire turfgrass industry. The survey design only focuses on the major industry segments, which covers the majority of maintained turf in Virginia.

Strata Identification

The eleven unique strata, or sectors, identified for sampling purposes were Single Family Dwellings, Golf Courses, Sod Farms, Service Companies, Cemeteries, Churches, Parks, Schools, General Areas (commercial businesses, multiple family dwellings, etc.), Airports, and Highways. Each sector was divided into four substrata representing four state geographical regions and selected proportionate to the state population distribution.

Survey Design

This survey design utilized special lists developed for each stratum. The combined list is called a List Sampling Frame (LSF). An LSF is a sampling frame consisting of a list of individuals, businesses, or other entities from which a sample is selected. An LSF is usually divided into multiple strata. In the LSF context, each stratum is a mutually exclusive list (e.g., a list of parks, a list of golf courses, etc.). A properly constructed list frame is an efficient sampling tool. Since names and addresses are known, relatively inexpensive methods of data collection, such as mail and telephone interviews, can be used. Below is a brief description of each stratum.

Airports

A list of Virginia’s airports was found on the internet through the Virginia Department of Aviation website.

Cemeteries

Information for cemeteries was collected differently for the 2004 survey and is not comparable to the 1998 results. For this survey, cemeteries included only commercially licensed cemeteries from the Virginia State Cemetery Board and was independent of churches. Church cemeteries were counted as part of church property only and not included in the cemetery category. Privately owned and small family cemeteries were excluded.

Churches

This stratum was a representative sample of all known churches in the State. A list of these establishments was purchased from a mail list company. Church cemeteries were included as part of church property and is reported in the church category.

General Areas

This stratum comprises commercial businesses, government facilities, and multi-family dwellings. A list of these types of establishments was purchased from a mail list company.

Golf Courses

A complete list of golf courses was obtained from several different websites including the Virginia State Golf Association. Cooperation from this stratum in providing complete, accurate, and detailed information on this very visible and intensively maintained sector was excellent.

Highways

Highways in this survey include all of the state maintained roadsides in Virginia. The information for this stratum was provided by the Virginia Department of Transportation.

Parks

A complete listing of parks in the state of Virginia was obtained from the Virginia Recreation and Park Society and from the Department of Conservation and Recreation.

Schools

Schools were divided in to two different sectors in 2004. The sector titled Schools¹ is comparable with 1998 and includes all public school systems, public universities, and private universities. The sector titled Schools² is a new sector not represented in the 1998 survey and includes private schools K-12th grade, pre-schools, and private religious schools. These lists were obtained through a mail list company, the State Council of Higher Education for Virginia, and the Virginia Department of Education.

Service Companies

This survey focused on those businesses that specialize in turfgrass related merchandise (nurseries, lawn care centers, landscapers, garden centers, etc.) or those that service turf. The list was purchased through a mail list company. The population for this group is potentially overstated because of the seasonality of small lawn care services that typically go in and out of active business status.

Home Lawns

The list of home lawns was purchased from a mail list company. Each establishment was then broken into four substrata for sampling. A larger sample was selected from northern Virginia and the Tidewater region to adequately represent the concentration of homeowners in those two areas.

Sod Producers

A complete list of sod producers in the state was obtained from our list frame and through the Virginia Cooperative Extensions sod directory.

Questionnaire Versions

Ten questionnaires were used to collect data from the 11 strata. Data for cemeteries and churches were collected on the same questionnaire version. Schools¹ and schools² were also collected on the same questionnaire version.

Data Collection

Three different mailings were conducted including a postcard reminder. The first mailing occurred in March of 2005. Approximately 20 days later, a postcard reminder was mailed to each respondent. In April 2005, a second mailing occurred including everyone who had not yet returned a questionnaire. By mid-May 2005, telephone interviewing began. Telephone interviewers were trained and many hours were logged trying to boost response rates. By July 1, 2005, it was apparent that response rates were still low for many sectors, so field interviewers were trained and sent out to complete the remaining samples for selected groups of non-respondents. By early August 2005, parks and airports still had low response rates, so additional face-to-face interviews were conducted for these sectors.

Sector	Population Size	Sample Size	Number of Surveys Completed ³	Percent of Surveys Completed ³	Number of Positive Reports
Highway Roadsides	1	1	1	100.0%	1
Sod Farms	20	20	19	95.0%	19
Golf Courses	345	345	246	71.3%	240
Airports	67	67	47	70.1%	46
Parks	193	193	105	54.4%	99
Schools ¹	317	317	124	39.1%	111
Service Companies	2,063	2,063	490	23.8%	96
Schools ²	545	545	133	24.4%	81
Churches	9,225	1,036	235	22.7%	182
Home Lawns ⁴	2,321,787	10,000	2,228	22.3%	1,820
Cemeteries	123	123	27	22.0%	23
General Areas	20,883	3,204	593	18.5%	267

¹ Public school systems, Public & Private universities

² Private K-12, Pre-schools, Private religious schools

³ Includes valid zero reports

⁴ Population size from 2004 American Community Survey, Virginia: Selected Housing Characteristics

Data Editing and Analysis

All questionnaires were manually edited for completeness, accuracy, legibility, and validity. After the manual edits and data entry was complete, all data was processed through a computer program that performed additional edit checks. The computer edit checked for the same accuracy errors as the manual edit and additionally performed relational checks across questionnaires. The errors identified by the computer edit were reviewed and the data updated accordingly. After the data was corrected, additional analysis was performed to look at extreme values, item averages, and overall precision of the estimates.

Data Summarization

Data was summarized using a comprehensive summary written using Statistical Analysis Software (SAS) programs. Generally, data from usable reports were summed then multiplied by their item weight.

There was also a requirement to use imputation routines for individual item non response. In some cases, all but one item was completed for a particular section. Rather than make that section unusable, variables were imputed using means of similar questionnaires.