

**Supplementary table 1:** Proportion of crop area (%) per province in South Africa

<b>Crops</b>	<b>EC</b>	<b>FS</b>	<b>GP</b>	<b>KZN</b>	<b>LP</b>	<b>MP</b>	<b>NC</b>	<b>NW</b>	<b>WC</b>
<b>Apples</b>	15.46	1.92	0.32	0.03	0.00	0.76	0.00	0.00	81.51
<b>Avocadoes</b>	0.09	0.00	0.00	4.44	54.49	40.31	0.00	0.68	0.00
<b>Bananas</b>	0.44	0.00	0.03	13.13	13.83	72.57	0.00	0.00	0.00
<b>Barley</b>	2.03	1.05	0.00	0.02	0.00	0.00	12.56	0.62	83.71
<b>Citrus</b>	21.98	0.18	0.09	5.28	31.40	20.51	1.10	2.64	16.82
<b>Cotton</b>	0.00	0.90	0.00	7.93	46.72	25.84	10.54	8.07	0.00
<b>Dry beans</b>	0.25	31.61	9.00	3.99	1.93	41.91	0.77	8.86	1.67
<b>Grapes (table)</b>	0.04	0.64	0.05	0.00	1.14	5.01	33.18	0.67	59.28
<b>Grapes (wine)</b>	0.00	0.21	0.02	0.00	0.04	0.00	6.38	0.00	93.34
<b>Green beans</b>	3.91	9.05	10.93	4.50	11.55	16.63	24.11	7.45	11.89
<b>Groundnuts</b>	0.00	40.49	0.00	0.37	5.63	0.60	13.36	39.38	0.17
<b>Lucerne</b>	26.15	11.72	0.24	1.25	1.59	1.86	18.21	4.14	34.84
<b>Maize</b>	0.46	40.53	3.86	3.18	2.06	19.72	2.30	27.48	0.41
<b>Mangoes</b>	0.00	0.00	0.00	2.06	61.58	35.97	0.18	0.00	0.22
<b>Peaches</b>	2.35	2.08	4.19	1.07	2.09	3.75	0.94	1.79	81.74
<b>Pears</b>	8.02	0.05	0.43	0.30	0.00	0.04	0.00	0.00	91.16
<b>Pineapples</b>	69.49	0.00	0.00	30.05	0.38	0.08	0.00	0.00	0.00
<b>Plums</b>	2.50	0.43	0.17	0.00	0.83	0.00	0.50	1.17	94.39
<b>Potatoes</b>	6.52	32.15	0.97	6.82	12.43	9.36	9.45	2.36	19.94
<b>Sorghum</b>	0.35	50.82	0.54	0.05	16.75	20.43	1.34	6.59	3.13
<b>Soybeans</b>	0.18	18.81	1.98	18.22	7.64	47.34	0.05	5.78	0.00
<b>Sugar cane</b>	1.34	0.00	0.00	90.13	0.10	8.43	0.00	0.00	0.00
<b>Sunflowers</b>	0.01	43.09	0.99	0.25	15.17	4.27	0.35	35.78	0.09
<b>Tomatoes</b>	6.98	0.31	0.97	3.48	62.61	6.14	0.37	2.81	16.34
<b>Wheat</b>	0.70	41.15	0.19	1.01	1.90	2.22	7.72	2.92	42.19

*EC, Eastern Cape; FS, Free State; GP, Gauteng; KZN, Kwa-Zulu Natal; LP, Limpopo; MP, Mpumalanga; NC, Northern Cape; NW, North-West; WC, Western Cape*

**Supplementary table 2:** Pesticide use (kg) per province in South Africa, estimated from agricultural census and pesticide sales data (totals exclude quantities applied to crops not included in the Agricultural Stats SA census of 2002 and other non-agricultural uses).

Active ingredient	EC	FS	GP	KZN	LP	MP	NC	NW	WC	Total
Glyphosate	53 675	1 057 608	103 189	379 577	110 606	669 191	86 368	693 986	487 308	3 641 509
Petroleum-oil	705 797	6308	3 124	168 223	1 000 149	653 691	35 013	84 131	564 868	3 221 304
Mancozeb	318 436	203 071	17 198	99 928	547 175	273 830	119 072	58 709	1 127 842	2 765 260
Copper-oxychloride	53 128	52 812	18 887	30 597	294 010	146 912	46 080	19 220	414 561	1 076 206
Atrazine	5258	383 005	34 666	96 761	25 635	190 893	21 076	247 656	4969	1 009 920
Mineral oil	134 487	15 701	2 675	2 285	12 136	14 133	425	1021	670 891	853 755
Terbutylazine	2998	261 281	24 137	24 836	15 944	127 244	18 944	172 103	26 926	674 413
Acetochlor	5157	250 300	22 594	34 067	21 609	132 583	18 675	161 826	9734	656 545
Metolachlor	2046	160 894	14 796	23 494	19 508	101 710	14 253	99 267	7739	443 707
2.4-D	1798	132 882	8 476	17 047	9784	49 191	11 847	62 237	38 019	331 281
Paraquat	22 736	30 607	2 508	45 344	33 733	31 151	11 005	13 493	105 290	295 866
Alachlor	2762	98 646	6 284	35 535	20 381	55 782	6032	53 828	6 643	285 892
MCPA	3689	77 787	1 127	2 503	5257	9111	22 136	10 513	144 877	277 000
Ethylene-dibromide	16 176	79 194	2 398	16 862	31 578	23 146	23 282	5867	49 375	247 878
MSMA	3165	77	0	213 810	4274	22 174	911	697	0	245 108
Potassium-phosphite	53 401	40 986	1 268	26 794	26 402	19 191	16 680	3940	47 492	236 154
Imidacloprid	40 748	10 559	788	9 849	55 690	38 934	2879	9136	46 301	214 884
Cyanamide	2518	1488	152	5	2125	9441	61 787	1254	124 092	202 860
EPTC	5708	65 561	4 560	8 609	12 035	26 832	9868	28 783	16 474	178 430
Trifluralin	967	47 003	1 396	6 714	20 815	10 520	11 130	29 997	31 251	159 792
Copper-carbonate	6657	15 459	954	6 050	68 715	25 644	4775	2555	17 916	148 725
Chlorothalonil	8277	35 048	1 781	7 774	28 497	11 578	11 662	6471	24 090	135 177
Terbufos	3820	40 364	3 791	4 064	6967	22 245	2858	27 099	3541	114 750
s-metolachlor	1011	23 501	2 086	52 398	1761	16 023	1278	14 929	330	113 317
Metribuzin	1950	4118	183	83 634	1998	10 527	1001	485	2184	106 080
Aldicarb	10 096	27 039	832	6 840	17 034	12 168	8168	2540	20 282	105 000
Copper-hydroxide	2006	9626	1 270	2 089	9321	6940	6023	1701	65 956	104 931

<b>Active ingredient</b>	<b>EC</b>	<b>FS</b>	<b>GP</b>	<b>KZN</b>	<b>LP</b>	<b>MP</b>	<b>NC</b>	<b>NW</b>	<b>WC</b>	<b>Total</b>
Diuron	1285	0	0	86 523	96	8096	0	0	0	96 000
Mesotrione	590	29 871	2848	19 241	1537	16 114	1696	20 250	300	92 446
Sulphur	706	335	538	1438	37 210	20 518	4049	442	25 045	90 280
Chlorpyrifos-ethyl	3759	7903	299	278	430	629	3585	595	70 265	87 744
Fenamiphos	6162	18 181	717	4551	21 418	7091	5899	4381	18 201	86 600
Hexazinone	1132	0	0	76 255	85	7135	0	0	0	84 607
Simazine	1151	23 111	2209	1990	2392	12 439	5562	15 757	18 642	83 253
Propineb	2579	9288	387	2299	10 107	3627	7233	1007	45 096	81 624
Ametryn	1068	0	0	71 931	80	6730	0	0	0	79 810
Glyphosate-trimesium	3204	9730	1080	13 613	3388	7752	2276	6695	27 261	75 000
Bromoxynil	597	20 868	517	751	1083	3246	4921	4379	27 508	63 870
Maneb	2798	3116	3692	1869	6082	7320	10 856	2730	15 414	53 878
Copper	1732	8594	263	1812	3311	2485	4205	628	30 086	53 116
Cypermethrin	527	14 371	1238	1832	7298	8401	2988	8444	7992	53 090
Fosthiazate	5631	12 176	379	3340	9219	6491	3730	1274	9959	52 200
Azinphos-methyl	5018	1765	483	404	639	775	438	237	42 105	51 865
Chlorpyrifos	1605	7859	1233	2182	5149	6992	3647	2447	16 027	47 142
Copper-sulphate	48	161	20	91	2659	2068	7049	124	34 275	46 495
Dimethenamid-P	210	18 532	1767	1453	942	9016	1052	12 563	186	45 720
Bentazone	845	7248	2610	4910	4104	13 967	4822	3444	2449	44 400
Ethephon	7703	392	3	27 258	115	2418	977	45	2004	40 915
Thiram	921	674	1301	328	705	1153	327	639	32 268	38 316
Propiconazole	397	10 212	121	303	789	1075	3085	1309	18 900	36 190
Dimethoate	290	13 315	61	326	614	718	2881	960	16 215	35 380
Carbofuran	229	13 144	987	893	1526	5696	931	7901	528	31 834
Tebuconazole	603	8184	246	504	1400	1204	2958	1394	14 912	31 405
Fosetyl-Al	3555	49	5	1880	4479	3408	1854	78	15 395	30 704
Benomyl	3347	5036	234	1452	7113	5086	954	4465	2861	30 547
Methomyl	4897	3466	38	1250	7105	4701	887	825	7211	30 380

<b>Active ingredient</b>	<b>EC</b>	<b>FS</b>	<b>GP</b>	<b>KZN</b>	<b>LP</b>	<b>MP</b>	<b>NC</b>	<b>NW</b>	<b>WC</b>	<b>Total</b>
Profenofos	3569	3013	133	1437	7298	3847	1926	690	8437	30 350
Oxamyl	9069	3621	159	4371	5099	1358	1089	642	3062	28 469
Methamidophos	1649	7475	230	1628	3506	2420	2206	580	5507	25 201
Captan	3163	442	73	15	58	162	38	61	20 637	24 648
2.4-D-ester	152	9981	340	419	476	1942	1448	2676	6941	24 375
Thiamethoxam	217	8842	757	659	700	3961	617	5619	1429	22 800
Metiram	2089	223	61	21	20	165	793	11	18 427	21 810
Sulcotrione	106	8115	774	1586	413	4037	461	5501	81	21 075
Pyraclostrobin	1919	3395	299	859	2884	3309	567	2077	3709	19 018
Epoxiconazole	185	5180	318	437	306	1983	1251	2302	6778	18 739
Parathion-ethyl	283	6256	29	195	540	502	1182	464	6548	16 000
Spiroxamine	1	46	4	0	39	150	1793	20	13 446	15 500
Tartar-emetic	3359	27	14	807	4797	3134	168	404	2570	15 280
Carbendazim	329	3678	55	151	399	529	1346	562	8064	15 114
Cartap	974	1394	138	637	6788	1010	437	381	2479	14 240
Diquat	691	684	40	1135	246	412	1181	87	9285	13 760
Azoxystrobin	412	2512	86	449	841	773	1409	550	6394	13 425
Iprodione	527	46	86	112	1633	254	604	99	8661	12 023
Lambda-cyhalothrin	104	4439	409	407	634	2207	485	2228	1071	11 983
Metalaxyl-M	2703	1371	57	1174	2446	1633	128	1009	862	11 384
Chlormequat-chloride	77	4537	21	111	210	245	851	321	4652	11 025
2.4-D-amine	141	0	0	9463	11	885	0	0	0	10 500
Endosulfan	139	3640	360	334	1061	1855	211	2504	265	10 370
Bromacil	5911	3	2	2489	533	334	18	42	269	9600
Cymoxanil	382	1586	54	364	1002	522	828	137	4219	9094
Glufosinate-ammonium	231	67	58	14	52	143	867	41	7528	9000
Methidathion	1900	15	8	456	2714	1773	95	228	1454	8644
Fenpyroximate	83	3163	262	134	870	1284	700	1443	309	8250
Metaldehyde	61	26	7	8	54	82	771	12	7061	8082

<b>Active ingredient</b>	<b>EC</b>	<b>FS</b>	<b>GP</b>	<b>KZN</b>	<b>LP</b>	<b>MP</b>	<b>NC</b>	<b>NW</b>	<b>WC</b>	<b>Total</b>
Boscalid	284	1118	43	264	978	438	911	114	3834	7984
Imazethapyr	109	1497	399	778	639	2306	779	873	319	7700
Parathion-methyl	1079	134	23	2	0	53	0	0	5691	6982
Nicosulfuron	32	2818	269	221	143	1371	160	1911	28	6953
Carbaryl	24	605	73	119	450	601	561	444	4059	6936
Alpha-cypermethrin	43	1410	151	366	1636	1531	449	1133	73	6 792
Tetradifon	443	72	25	361	2105	1216	419	343	1767	6752
Folpet	1	22	2	0	22	87	898	12	5697	6740
Dimethomorph	1	25	2	1	20	72	806	10	5718	6656
Omethoate	45	2634	12	64	122	142	494	187	2700	6400
Flusilazole	27	1991	170	363	201	1406	244	307	1291	6000
Pirimicarb	129	114	230	59	115	206	52	99	4496	5500
Metazachlor	7	1943	243	118	204	1146	381	1300	50	5390
Kresoxim-methyl	669	80	14	10	61	79	117	5	4257	5293
Pyrimethanil	0	14	1	0	9	30	494	4	4654	5206
Chlorfenapyr	1108	9	5	266	1582	1034	55	133	848	5040
Haloxyfop-r-methyl	131	31	32	9	20	44	294	17	4412	4990
Metalaxyl	839	758	30	452	793	316	356	82	1285	4911
Trichlorfon	961	8	4	231	1372	896	48	115	735	4370
Acephate	227	222	107	104	927	210	74	87	2348	4307
Thiodicarb	17	1539	136	140	289	833	123	1002	22	4100
Dichlorvos (DDVP)	7	899	255	114	69	1218	247	256	911	3976
Cyproconazole	42	1128	29	42	53	172	326	244	1885	3920
Trifloxystrobin	187	1305	66	223	369	459	288	341	562	3800
Thiabendazole	824	7	4	198	1177	769	41	99	631	3750
Cydia pomonella GV	571	71	12	1	0	28	0	0	3013	3697
Acetamiprid	29	1409	127	192	122	747	105	911	55	3697
Deltamethrin	39	732	66	200	880	761	243	545	191	3657
Dithianon	564	70	12	1	0	28	0	0	2973	3647

<b>Active ingredient</b>	<b>EC</b>	<b>FS</b>	<b>GP</b>	<b>KZN</b>	<b>LP</b>	<b>MP</b>	<b>NC</b>	<b>NW</b>	<b>WC</b>	<b>Total</b>
Pyriproxifen	791	6	3	190	1130	738	40	95	605	3600
Fluazifop-P-butyl	772	113	34	513	147	195	172	53	1539	3540
Pendimethalin	43	471	149	449	502	1242	295	230	119	3500
Fenbutatin-oxide	637	224	10	178	872	580	91	82	773	3448
Abamectin	413	43	8	188	1300	629	136	141	519	3376
Famoxadone	179	887	27	188	345	272	377	67	1016	3358
Tau-fluvalinate	480	55	11	2	0	22	0	0	2741	3312
Clodinafop	21	1205	6	30	56	65	226	85	1235	2928
Malathion	595	5	3	143	850	555	30	71	455	2707
Buprofezin	550	4	2	139	867	573	27	67	420	2650
Guazatine	572	5	2	138	818	534	29	69	438	2604
Difenoconazole	86	853	45	114	187	289	171	365	253	2363
Prothioconazole	27	626	3	15	29	33	216	49	1303	2300
Thiacloprid	312	39	7	1	0	15	0	0	1643	2016
Imazalil	419	3	2	101	599	391	21	50	321	1908
Bupirimate	261	72	7	11	73	57	12	4	1410	1906
Metrafenone	0	6	1	0	5	20	228	3	1637	1900
Mefenpyr-diethyl	15	736	3	18	34	40	151	53	841	1890
Fenarimol	289	36	6	1	0	14	0	0	1526	1872
Thiophanate	401	3	2	96	573	374	20	48	307	1824
Tembotrione	8	732	70	57	37	356	42	496	7	1806
loxynil	23	0	0	1577	2	148	0	0	0	1750
Gibberellic-acid	134	12	2	32	195	172	357	23	796	1723
Benfuracarb	6	826	12	4	261	335	23	128	49	1644
Quaternary-Ammonium-salts	276	10	4	45	257	171	9	22	846	1639
Triadimefon	144	284	2	39	206	144	109	37	670	1635
Methiocarb	17	5	1	2	11	11	116	1	1390	1553
Fipronil	269	2	1	70	558	353	14	32	206	1506
Demeton-S-methyl	10	614	3	15	28	33	115	44	630	1493

<b>Active ingredient</b>	<b>EC</b>	<b>FS</b>	<b>GP</b>	<b>KZN</b>	<b>LP</b>	<b>MP</b>	<b>NC</b>	<b>NW</b>	<b>WC</b>	<b>Total</b>
Indoxacarb	120	72	5	12	27	21	20	11	1091	1380
Iprovalicarb	0	5	0	0	7	29	240	4	1059	1344
Tribenuron-methyl	19	240	1	6	11	13	138	21	865	1313
Triticonazole	18	274	1	7	12	14	132	23	818	1300
Fenoxycarb	193	24	4	0	0	10	0	0	1019	1250
Quinoxifen	0	5	0	0	7	31	247	4	954	1250
2.4-DP	262	2	1	63	374	244	13	31	200	1190
Propaquizafop	33	295	40	72	209	271	50	124	93	1188
Al-phosphide	5	474	45	37	24	231	27	321	5	1169
Zineb	85	17	11	42	676	77	8	32	187	1134
Triadimenol	9	189	1	5	24	21	98	15	650	1013
Triflumuron	211	2	1	52	331	214	11	25	162	1008
Flumetsulam	11	305	40	40	63	146	116	247	31	1000
Sulfosulfuron	7	401	2	10	19	22	75	28	411	975
Dinocap	113	15	2	0	0	7	23	0	781	942
Fenoxaprop-P-ethyl	6	380	2	9	18	21	71	27	390	924
Chlorimuron-ethyl	3	144	15	266	59	374	0	44	0	905
Isoxadifen-ethyl	4	366	35	29	19	178	21	248	4	903
Fludioxonil	4	355	34	28	18	173	20	240	4	875
Propamocarb-HCl	60	3	8	30	542	53	3	24	141	866
Flurochloridone	25	323	8	27	118	55	37	177	75	846
Diazinon	582	0	0	252	3	1	0	0	0	837
Metsulfuron-methyl	8	232	1	6	11	12	68	18	403	758
Pymetrozine	0	7	0	59	350	194	79	61	0	750
Beta-cypermethrin	3	267	48	27	15	228	11	134	8	740
Pencycuron	47	231	7	49	89	67	68	17	143	718
Flufenoxuron	93	10	2	1	0	4	0	0	581	690
Imazamox	0	277	6	2	98	27	2	230	1	644
Iodosulfuron-methyl-sodium	5	245	1	6	11	13	50	18	280	630

<b>Active ingredient</b>	<b>EC</b>	<b>FS</b>	<b>GP</b>	<b>KZN</b>	<b>LP</b>	<b>MP</b>	<b>NC</b>	<b>NW</b>	<b>WC</b>	<b>Total</b>
Betacyfluthrin	16	176	14	24	76	99	25	91	87	608
Carbosulfan	3	244	23	19	12	119	14	165	2	602
Triasulfuron	4	247	1	6	11	13	46	17	253	600
Oxadiazon	48	4	4	10	57	42	34	6	371	575
Linuron	36	177	5	38	68	51	52	13	110	550
Fenthion	6	5	10	8	159	99	3	4	205	500
Halosulfuron-methyl	2	198	19	16	10	96	11	134	2	488
Spirodiclofen	106	1	0	25	151	98	5	13	81	480
Ethoprophos	97	1	0	23	138	90	5	12	74	440
Gamma-cyhalothrin	49	28	3	10	103	18	7	6	215	438
Lufenuron	29	104	4	26	112	37	31	11	83	436
Prohexadione-Ca	59	7	1	0	0	3	0	0	310	380
2.4-DB	1	65	7	63	26	164	0	20	0	346
Bitertanol	9	42	23	9	26	34	52	39	95	330
Fenbuconazole	2	136	1	3	6	7	25	10	139	330
Quinalphos	2	133	13	10	7	65	8	90	1	329
Hexaconazole	2	65	0	3	10	9	26	5	199	319
Propoxur	0	1	0	0	1	4	39	1	254	300
Imazapyr	0	126	3	1	44	12	1	105	0	293
Procymidone	12	26	9	8	34	20	33	8	122	272
Emamectin	29	3	2	5	94	10	1	4	122	270
Mepiquat-chloride	0	2	0	20	117	65	26	20	0	250
Penconazole	30	3	1	0	0	1	0	0	205	240
Spinosad	17	1	2	8	150	15	1	7	39	240
Esfenvalerate	7	48	4	6	32	33	9	25	42	205
Propargite	3	34	4	8	46	31	7	28	6	166
Chlorantraniliprole	24	3	0	0	0	1	0	0	125	153
Rimsulfuron	10	32	1	9	44	12	10	4	28	150
Bifenthrin	6	18	1	9	60	22	9	9	16	150



<b>Active ingredient</b>	<b>EC</b>	<b>FS</b>	<b>GP</b>	<b>KZN</b>	<b>LP</b>	<b>MP</b>	<b>NC</b>	<b>NW</b>	<b>WC</b>	<b>Total</b>
Uniconazole-P	0	0	0	6	74	54	0	1	0	135
Prochloraz	17	16	1	7	26	18	5	3	20	112
Tralomethrin	0	44	4	3	2	21	2	30	0	108
Dicamba	0	43	4	3	2	21	2	29	0	107
Acrinathrin	6	0	1	3	56	6	0	3	15	90
Thifensulfuron-methyl	0	17	0	0	1	1	3	1	18	42
Mevinphos	2	4	0	1	3	2	1	1	6	20

*EC, Eastern Cape; FS, Free State; GP, Gauteng; KZN, Kwa-Zulu Natal; LP, Limpopo; MP, Mpumalanga; NC, Northern Cape; NW, North-West; WC, Western Cape*