

Evaluating the water retention effects of AquaBoostAG30 on soil

Location:

Kruger Berries
Arbor Park, Tzaneen, 0850, Limpopo, South Africa

Scope:

The scope of this trial was to do a pot trial under controlled irrigation conditions to evaluate the effects of AquaBoostAG30 on soil water retention. The blueberry plants will also be closely monitored to assess the possibility of the phytotoxicity risk.

Method:

All the pots contained soil with established blueberry plants. Each pot contained approx. 9-10kg of soil.

Based on the recommended application rates, half of the pots had AquaBoostAG30 applied to the soil. The soil in the remaining pots was not treated and these pots are referred to as the control pots.

Before each irrigation event, each pot was weighed. The pots were then irrigated and the amount of water(ml) applied to each pot was recorded based on the increased weight of the pots.

The pots were weighed immediately after irrigation and then again 10 and 30 minutes after the irrigation event. Based on the weights of the pots at these intervals, the amount of water(ml) which was retained was calculated.

Once the water retention trial concluded, the blueberries were harvested and soil removed from the pots for assessment.

Data:

Table 1 shows the data and recorded measurements for the control pots.

Table 2 shows the data and recorder measurements for the pots that were treated with AquaBoostAG30.

Results and Discussion:

After 8 weeks of the trial, the results were recorded and average water retention figures calculated.

30 minutes after each irrigation event, the control pots, which did not have any AquaBoostAG30 applied, had lost 55.61% of the irrigation water which had been applied 30 minutes previously.

30 minutes after each irrigation event, the treated pots, to which AquaBoostAG30 had been applied, had lost 19.44% of the irrigation water which had been applied 30 minutes previously.

This shows that after the AquaBoostAG30 had been applied to the soil, this soil had an increase in water retention of 36.17%. This result is reflected on Graph 1 below.

The blueberry plants and soil were assessed and it was determined that no detrimental effects were evident. It was noted that in the pots with AquaBoostAG30 applied, there had been increased root growth and the plants were healthy.

Recommendations:

Based on the findings, AquaBoostAG30 is recommended for increasing water retention in the soil. No detrimental effects were found.

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Table 1

AquaBoostAG30 Trial Contol									
weight before irrigation	weight after irrigation	estimated ml irrigatin	Weight after 10mins	Weight after 30mins	Loss after 10 mins	Loss after 30 mins	estimated water retention	% water loss	
9.002	9.43	428	9.36	9.131	70	299	129 ml		69.86
9.09	9.503	413	9.314	9.122	189	381	32 ml		92.25
8.769	9.9	1131	9.823	8.979	77	921	210 ml		81.43
10.039	10.288	249	10.259	10.165	29	123	126 ml		49.40
10.184	10.386	202	10.364	10.295	22	91	111 ml		45.05
10.129	10.607	478	10.332	10.182	275	425	53 ml		88.91
10.997	11.248	251	11.126	11.094	122	154	97 ml		61.35
10.136	10.495	359	10.378	10.307	117	188	171 ml		52.37
10.442	10.747	305	10.626	10.575	121	172	133 ml		56.39
10.216	10.436	220	10.34	10.221	96	215	5 ml		97.73
10.364	10.644	280	10.45	10.405	194	239	41 ml		85.36
10.311	10.532	221	10.472	10.321	60	211	10 ml		95.48
10.007	10.252	245	10.125	10.124	127	128	117 ml		52.24
9.926	10.126	200	10.001	9.984	125	142	58 ml		71.00
11.056	11.369	313	11.264	11.158	105	211	102 ml		67.41
10.016	10.449	433	10.278	10.236	171	213	220 ml		49.19
10.451	10.676	225	10.568	10.461	108	215	10 ml		95.56
11.035	11.307	272	11.276	11.223	31	84	188 ml		30.88
10.389	10.681	292	10.624	10.575	57	106	186 ml		36.30
10.345	10.525	180	10.5	10.46	25	65	115 ml		36.11
10.061	10.404	343	10.342	10.279	62	125	218 ml		36.44
9.911	10.364	453	10.362	10.307	2	57	396 ml		12.58
10.156	10.355	199	10.334	10.306	21	49	150 ml		24.62
10.036	10.235	199	10.22	10.206	15	29	170 ml		14.57
10.925	11.128	203	11.118	11.101	10	27	176 ml		13.30
9.819	10.02	201	10.011	9.936	9	84	117 ml		41.79
10.005	10.206	201	10.149	10.127	57	79	122 ml		39.30
9.865	10.065	200	10.053	9.964	12	101	99 ml		50.50
10.64	10.93	290	10.834	10.811	96	119	171 ml		41.03
11.273	11.526	253	11.406	11.313	120	213	40 ml		84.19
10.778	10.988	210	10.902	10.795	86	193	17 ml		91.90
10.528	10.766	238	10.713	10.615	53	151	87 ml		63.45
10.344	10.542	198	10.482	10.454	60	88	110 ml		44.44
10.367	10.672	305	10.654	10.4	18	272	33 ml		89.18
10.37	10.671	301	10.669	10.415	2	256	45 ml		85.05
10.473	10.923	450	10.82	10.755	103	168	282 ml		37.33
11.54	11.742	202	11.58	11.563	162	179	23 ml		88.61
10.592	10.826	234	10.79	10.671	36	155	79 ml		66.24
11.378	11.658	280	11.654	11.535	4	123	157 ml		43.93
10.68	10.933	253	10.775	10.773	158	160	93 ml		63.24
10.304	10.51	206	10.425	10.406	85	104	102 ml		50.49
10.574	10.774	200	10.682	10.668	92	106	94 ml		53.00
10.34	10.536	196	10.531	10.492	5	44	152 ml		22.45

Table 2

AquaBoostAG30 Trial Treated Pots									
weight before irrigation	weight after irrigation	estimated ml irrigatin	Weight after 10mins	Weight after 30mins	Loss after 10 mins	Loss after 30 mins	imated water retent	% water loss	
8.96	9.45	490	9.24	9.232	210	218	272 ml	44.49	
9.647	10.147	500	10.001	9.989	146	158	342 ml	31.60	
9.858	10.058	200	10.033	10.024	25	34	166 ml	17.00	
10.585	10.695	110	10.671	10.652	24	43	67 ml	39.09	
9.834	10.256	422	10.211	10.105	45	151	271 ml	35.78	
10.612	11.124	512	11.111	10.989	13	135	377 ml	26.37	
10.002	10.444	442	10.358	10.332	86	112	330 ml	25.34	
10.905	11.408	503	11.297	11.236	111	172	331 ml	34.19	
10.252	10.454	202	10.4	10.345	54	109	93 ml	53.96	
11.115	11.342	227	11.281	11.222	61	120	107 ml	52.86	
10.196	10.408	212	10.388	10.388	20	20	192 ml	9.43	
10.197	10.663	466	10.612	10.566	51	97	369 ml	20.82	
9.868	10.075	207	10.003	9.998	72	77	130 ml	37.20	
10.572	10.988	416	10.809	10.766	179	222	194 ml	53.37	
10.572	10.988	416	10.809	10.766	179	222	194 ml	53.37	
10.065	10.451	386	10.424	10.366	27	85	301 ml	22.02	
10.951	11.398	447	11.321	11.288	77	110	337 ml	24.61	
10.009	10.36	351	10.32	10.276	40	84	267 ml	23.93	
10.202	10.644	442	10.627	10.585	17	59	383 ml	13.35	
10.025	10.494	469	10.488	10.449	6	45	424 ml	9.59	
10.244	10.43	186	10.42	10.389	10	41	145 ml	22.04	
9.814	10.258	444	10.252	10.226	6	32	412 ml	7.21	
10.766	11.263	497	11.258	11.221	5	42	455 ml	8.45	
9.911	10.364	453	10.362	10.307	2	57	396 ml	12.58	
9.728	10.19	462	10.182	10.169	8	21	441 ml	4.55	
9.615	10.043	428	10.036	10.028	7	15	413 ml	3.50	
10.535	11.024	489	10.989	10.989	35	35	454 ml	7.16	
9.758	10.268	510	10.252	10.235	16	33	477 ml	6.47	
9.866	10.065	199	10.05	10.021	15	44	155 ml	22.11	
9.826	10.022	196	10.001	9.982	21	40	156 ml	20.41	
10.653	10.916	263	10.905	10.871	11	45	218 ml	17.11	
9.835	10.283	448	10.266	10.26	17	23	425 ml	5.13	
10.735	11.217	482	11.168	11.159	49	58	424 ml	12.03	
10.305	10.502	197	10.477	10.437	25	65	132 ml	32.99	
9.957	10.444	487	10.439	10.436	5	8	479 ml	1.64	
9.947	10.328	381	10.323	10.32	5	8	373 ml	2.10	
10.208	10.589	381	10.573	10.532	16	57	324 ml	14.96	
10.669	11.32	651	11.165	11.158	155	162	489 ml	24.88	
10.442	10.762	320	10.705	10.693	57	69	251 ml	21.56	
10.031	11.175	1144	10.991	10.85	184	325	819 ml	28.41	
11.338	11.641	303	11.626	11.616	15	25	278 ml	8.25	
10.448	10.652	204	10.639	10.622	13	30	174 ml	14.71	
10.469	11.839	1370	11.714	11.623	125	216	1154 ml	15.77	
10.462	10.67	208	10.668	10.654	2	16	192 ml	7.69	
10.666	10.865	199	10.84	10.839	25	26	173 ml	13.07	
10.428	10.63	202	10.621	10.611	9	19	183 ml	9.41	
11.39	11.591	201	11.588	11.533	3	58	143 ml	28.86	
10.326	10.752	426	10.69	10.684	62	68	358 ml	15.96	
10.122	10.548	426	10.533	10.53	15	18	408 ml	4.23	
10.51	10.707	197	10.702	10.702	5	5	192 ml	2.54	
10.271	10.476	205	10.471	10.468	5	8	197 ml	3.90	
10.121	10.604	483	10.593	10.535	11	69	414 ml	14.29	
10.978	11.509	531	11.506	11.499	3	10	521 ml	1.88	
10.286	10.492	206	10.491	10.465	1	27	179 ml	13.11	
11.202	11.418	216	11.388	11.388	30	30	186 ml	13.89	
10.297	10.654	357	10.644	10.567	10	87	270 ml	24.37	
10.612	10.818	206	10.807	10.798	11	20	186 ml	9.71	
10.374	10.574	200	10.57	10.555	4	19	181 ml	9.50	
10.201	10.59	389	10.566	10.547	24	43	346 ml	11.05	
10.444	10.91	466	10.833	10.81	77	100	366 ml	21.46	
10.335	10.671	336	10.625	10.601	46	70	266 ml	20.83	
10.36	10.567	207	10.539	10.519	28	48	159 ml	23.19	
11.335	11.541	206	11.514	11.472	27	69	137 ml	33.50	
Average							305.52	19.44	

Graph 1

AquaBoostAg30 Water retention trial done in Pots at
Krugerberries Limpopo South Africa

