

**Table 7a. Comparison of select soil characteristics between direct seed and native/undisturbed sites, averaged across all depth increments. Different letters in the same grower's section in the same column are significantly different at  $P < 0.05$ .**

Site	SOIL	$\beta$ -glucosidase	Dehydrogenase	pH	EC	CEC	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Olsen P	K	S	Al	Cd
		$\mu\text{g g}^{-1} \text{ soil hr}^{-1}$	$\mu\text{g g}^{-1} \text{ soil hour}^{-1}$		$\mu\text{s cm}^{-3}$	meq 100g <sup>-1</sup>	parts per million						
1	Direct seed	16.0 a	0.5 b	5.3 b	102.7 a	21.0 b	47.6 a	20.9 a	26.9 b	310.6 b	24.0 a	10.3 a	0.09 a
1	Undisturbed	20.4 a	2.2 a	6.5 a	71.8 b	24.4 a	10.7 b	6.1 b	59.7 a	521.2 a	24.0 a	0.6 b	0.05 b
3	Direct seed	9.5 a	2.3 a	6.6 b	160.2 b	11.9 a	32.6 a	6.0 a	25.7 b	668.2 a	13.7 a	10.4 a	0.06 a
3	Undisturbed	14.4 a	4.2 a	7.7 a	295.1 a	11.2 a	52.8 a	7.1 a	47.2 a	797.8 a	12.6 a	0.24 a	0.03 b
4	Direct seed	19.0 b	1.0 b	5.2 b	139.0 b	17.1 a	55.7 a	5.4 b	50.6 a	692.2 a	24.7 a	17.3 a	0.09 a
4	Undisturbed	33.8 a	4.1 a	6.4 a	315.3 a	17.8 a	118.7 a	35.0 a	48.0 a	928.7 a	17.2 b	1.2 b	0.06 b
6	Direct seed	14.2 a	1.1 a	6.7 a	134.4 a	8.9 a	23.9 a	4.9 a	22.5 a	548.2 a	10.4 a	2.1 a	0.04 a
6	Undisturbed	8.8 a	2.0 a	6.9 a	79.1 a	9.3 a	35.3 a	3.5 a	17.2 a	442.7 a	7.6 a	0.7 a	0.03 b
8	Direct seed	13.3 b	0.8 b	6.1 b	71.2 b	21.8 a	32.9 b	9.4 b	17.1 b	330.1 b	12.8 b	7.1 a	0.05 a
8	Undisturbed	24.1 a	2.9 a	6.5 a	191.6 a	17.0 b	56.6 a	28.3 a	58.3 a	915.3 a	21.5 a	0.6 a	0.05 a
9	Direct seed	15.4 a	2.2 b	5.3 b	114.5 a	15.5 b	55.2 a	4.6 b	46.9 b	623.7 a	18.0 a	16.3 a	0.06 a
9	Undisturbed	26.8 a	5.7 a	6.6 a	168.3 a	17.6 a	73.0 a	12.2 a	64.2 a	805.0 a	11.5 b	0.3 a	0.05 b
10	Direct seed	15.2 a	2.9 b	5.3 b	134.1 a	17.4 b	45.4 b	8.9 a	27.9 a	234.9 b	26.1 a	25.3 a	0.06 a
10	Undisturbed	25.5 a	5.9 a	6.4 a	177.9 a	19.1 a	100.7 a	13.7 a	35.2 a	656.8 a	25.1 a	0.8 b	0.03 b
11	Direct seed	16.7 b	1.1 b	5.0 b	257.2 a	18.6 a	72.6 a	7.3 b	34.1 b	319.5 b	39.4 a	65.1 a	1.44 a
11	Undisturbed	33.0 a	3.9 a	6.8 a	330.7 a	18.0 a	100.4 a	36.2 a	92.5 a	1335.7 a	21.2 b	1.2 b	0.72 b
12	Direct seed	12.8 a	1.2 b	5.8 b	114.2 b	12.2 a	30.4 a	3.2 b	34.3 b	307.9 b	9.6 a	4.6 a	0.04 a
12	Undisturbed	16.3 a	2.7 a	7.1 a	230.7 a	12.5 a	55.2 a	7.5 a	52.7 a	517.3 a	12.1 a	0.4 a	0.04 a
13	Direct seed	11.2 b	0.9 b	6.2 a	132.7 b	19.3 a	35.2 a	6.0 b	18.4 b	366.4 b	9.6 a	3.9 a	0.04 a
13	Undisturbed	26.1 a	2.1 a	6.7 a	228.0 a	16.1 a	54.2 a	56.5 a	47.7 a	1156.0 a	13.3 a	1.4 a	0.03 a
14	Direct seed	18.9 a	2.5 b	5.7 b	97.7 b	20.4 b	45.9 a	6.6 b	37.8 b	558.1 a	23.0 a	2.6 a	0.09 a
14	Undisturbed	22.7 a	6.2 a	7.0 a	169.6 a	23.0 a	56.4 a	12.9 a	80.0 a	708.8 a	23.0 a	0.0 a	0.06 b
16	Direct seed	20.0 a	2.0 a	6.3 b	167.6 a	13.3 a	44.5 a	4.9 a	32.2 a	406.6 a	17.2 a	6.1 a	0.05 a

16	Undisturbed	21.1 a	2.1 a	7.5 a	223.0 a	11.7 b	45.2 a	5.2 a	40.2 a	544.3 a	9.7 b	0.2 a	0.04 a
----	-------------	--------	-------	-------	---------	--------	--------	-------	--------	---------	-------	-------	--------

**Table 7b. Comparison of select soil characteristics between direct seed and native/undisturbed sites from spring 2014, averaged across all depth increments. Different letters in the same grower's section in the same column are significantly different at  $P \leq 0.05$ .**

Site	SOIL	$\beta$ -glucosidase	Dehydrogenase	pH	EC	CEC	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Olsen P	K	S	Al	Cd
		$\rho$ -nitrophenol g-1 soil hr-1	$\mu$ g g-1 soil hour-1	1:1 water:soil	$\mu$ s cm-3	meq 100g-1	mg kg-1						
1	Direct seed	18.7 a	0.8 b	5.5 b	144 a	19.9 a	20.7 a	7.7 a	45 b	508 a	24.6 a	11.4 a	0.10 a
1	Undisturbed	20.4 a	2.2 a	6.5 a	72 b	24.4 a	10.7 b	6.1 b	59 a	521 a	24.0 a	0.6 b	0.05 a
3	Direct seed	11.9 a	2.0 b	6.6 b	160 b	11.9 a	32.6 b	6.0 a	25 b	668 a	13.7 a	10.4 a	0.06 a
3	Undisturbed	14.4 a	4.2 a	7.7 a	295 a	11.2 a	52.8 a	7.1 a	47 a	798 a	12.6 a	0.24 b	0.03 a
4	Direct seed	14.8 b	0.9 b	5.6 b	123 b	16.9 a	20.7 b	7.8 a	46 a	618 b	20.3 a	5.1 a	0.10 a
4	Undisturbed	33.8 a	4.1 a	6.4 a	315 a	17.8 a	118.7 a	35.0 a	48 a	929 a	17.2 b	1.2 b	0.06 a
6	Direct seed	12.3 a	0.9 b	6.1 a	88 a	8.9 a	23.9 a	4.9 a	22 a	548 a	10.4 a	2.1 a	0.04 a
6	Undisturbed	8.8 a	2.0 a	6.9 a	79 a	9.3 a	35.3 a	3.5 a	17 a	443 a	7.6 a	0.7 b	0.03 a
8	Direct seed	20.2 a	1.8 b	6.1 b	194 a	21.8 a	38.3 b	8.8 b	33 a	562 b	20.7 b	0.7 a	0.01 a
8	Undisturbed	24.1 a	2.9 a	6.5 a	192 a	17.0 a	56.6 a	28.3 a	58 a	915 a	21.5 a	0.6 a	0.05 a
9	Direct seed	13.6 b	0.8 b	5.7 b	139 a	15.5 a	31.1 b	8.6 b	47 b	566 b	31.0 a	5.42 a	0.06 a
9	Undisturbed	26.8 a	5.7 a	6.6 a	168 a	17.6 a	73.0 a	12.2 a	64 a	805 a	11.5 b	0.3 b	0.05 a
10	Direct seed	16.2 b	1.1 b	5.7 b	142 a	18.7 a	12.2 b	5.2 b	25 a	326 b	19 a	8.7 a	0.05 a
10	Undisturbed	25.5 a	5.9 a	6.4 a	177 a	19.1 a	100.7 a	13.7 a	35 a	657 a	25 a	0.8 b	0.03 a
11	Direct seed	17.3 b	0.8 b	5.4 b	186 b	19.8 a	29.6 b	6.9 b	23 b	313 a	15 b	13.1 a	0.04 b
11	Undisturbed	33.0 a	3.9 a	6.8 a	331 a	18.0 a	100.4 a	36.2 a	92 a	336 a	21.2 a	1.2 b	0.72 a
12	Direct seed	12.8 a	1.2 b	6.2 b	139 b	14.1 a	22.4 b	5.4 b	34 b	455 a	18.0 a	13.9 a	0.05 a
12	Undisturbed	16.3 a	2.7 a	7.1 a	231 a	12.5 a	55.2 a	7.5 a	52 a	517 a	12.1 a	0.4 b	0.04 a
13	Direct seed	11.5 b	0.9 b	5.5 a	144 b	17.5 a	19.9 a	6.0 b	31 a	520 b	26 a	11.0 a	0.01 a

<b>13</b>	<b>Undisturbed</b>	26.1 a	2.1 a	6.7 a	228 a	16.1 a	54.2 a	56.5 a	48 a	1156 a	13.3 a	1.4 b	0.03 a
<b>14</b>	<b>Direct seed</b>	19.3 b	1.2 b	5.4 b	513 a	20.4 a	14.9 b	4.5 b	38 b	444 b	13.0 a	0.7 a	0.06 a
<b>14</b>	<b>Undisturbed</b>	22.7 a	6.2 a	7.0 a	170 b	23.0 a	56.4 a	12.9 a	80. a	709 a	23.0 a	0.0 a	0.06 a
<b>16</b>	<b>Direct seed</b>	16.2 a	0.7 b	5.7 b	220 a	13.3 a	33.0 a	32 a	32 a	509 a	20 a	2.3 a	0.06 a
<b>16</b>	<b>Undisturbed</b>	21.1 a	2.1 a	7.5 a	223 a	11.7 a	45.2 a	5.2b	40 a	544 a	9.7 b	0.2 a	0.04 a