

Table 1 – Draft parameters and an expected range in drafts estimated by the model parameters for tillage and seeding implements <http://ag.arizona.edu/crops/equipment/agmachinerymgt.html>

Implement	SI Units				English Units				Soil Parameters			Range ±%
	Width units	Machine Parameters			Width units	Machine Parameters			F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	
		A	B	C		A	B	C				
<b>MAJOR TILLAGE TOOLS</b>												
<b>Subsoiler/Manure Injector</b>												
narrow point	tools	226	0.0	1.8	tools	129	0.0	2.7	1.0	0.70	0.45	50
30 cm winged point	tools	294	0.0	2.4	tools	167	0.0	3.5	1.0	0.70	0.45	50
<b>Moldboard Plow</b>	m	652	0.0	5.1	ft	113	0.0	2.3	1.0	0.70	0.45	40
<b>Chisel Plow</b>												
5 cm straight point	tools	91	5.4	0.0	tools	52	4.9	0.0	1.0	0.85	0.65	50
7.5 cm shovel/35 cm sweep	tools	107	6.3	0.0	tools	61	5.8	0.0	1.0	0.85	0.65	50
10 cm twisted shovel	tools	123	7.3	0.0	tools	70	6.7	0.0	1.0	0.85	0.65	50
<b>Sweep Plow</b>												
primary tillage	m	390	19.0	0.0	ft	68	5.2	0.0	1.0	0.85	0.65	45
secondary tillage	m	273	13.3	0.0	ft	48	3.7	0.0	1.0	0.85	0.65	35
<b>Disk Harrow, Tandem</b>												
primary tillage	m	309	16.0	0.0	ft	53	4.6	0.0	1.0	0.88	0.78	50
secondary tillage	m	216	11.2	0.0	ft	37	3.2	0.0	1.0	0.88	0.78	30
<b>Disk Harrow, Offset</b>												
primary tillage	m	364	18.8	0.0	ft	62	5.4	0.0	1.0	0.88	0.78	50
secondary tillage	m	254	13.2	0.0	ft	44	3.8	0.0	1.0	0.88	0.78	30
<b>Disk Gang, Single</b>												
primary tillage	m	124	6.4	0.0	ft	21	1.8	0.0	1.0	0.88	0.78	25
secondary tillage	m	86	4.5	0.0	ft	15	1.3	0.0	1.0	0.88	0.78	20
<b>Coulters</b>												
smooth or ripple	tools	55	2.7	0.0	tools	31	2.5	0.0	1.0	0.88	0.78	25
bubble or flute	tools	66	3.3	0.0	tools	37	3.0	0.0	1.0	0.88	0.78	25
<b>Field Cultivator</b>												
primary tillage	tools	46	2.8	0.0	tools	26	2.5	0.0	1.0	0.85	0.65	30
secondary tillage	tools	32	1.9	0.0	tools	19	1.8	0.0	1.0	0.85	0.65	25
<b>Row Crop Cultivator</b>												
S-tine	rows	140	7.0	0.0	rows	80	6.4	0.0	1.0	0.85	0.65	15
C-shank	rows	260	13.0	0.0	rows	148	11.9	0.0	1.0	0.85	0.65	15
No-till	rows	435	21.8	0.0	rows	248	19.9	0.0	1.0	0.85	0.65	20
<b>Rod Weeder</b>	m	210	10.7	0.0	ft	37	3.0	0.0	1.0	0.85	0.65	25
<b>Disk-Bedder</b>	rows	185	9.5	0.0	rows	106	8.7	0.0	1.0	0.88	0.78	40
<b>MINOR TILLAGE TOOLS</b>												
<b>Rotary Hoe</b>	m	600	0.0	0.0	ft	41	0.0	0.0	1.0	1.0	1.0	30
<b>Coil Tine Harrow</b>	m	250	0.0	0.0	ft	17	0.0	0.0	1.0	1.0	1.0	20
<b>Spike Tooth Harrow</b>	m	600	0.0	0.0	ft	40	0.0	0.0	1.0	1.0	1.0	30
<b>Spring Tooth Harrow</b>	m	2,000	0.0	0.0	ft	135	0.0	0.0	1.0	1.0	1.0	35
<b>Roller Packer</b>	m	600	0.0	0.0	ft	40	0.0	0.0	1.0	1.0	1.0	50
<b>Roller Harrow</b>	m	2,600	0.0	0.0	ft	180	0.0	0.0	1.0	1.0	1.0	50
<b>Land Plane</b>	m	8,000	0.0	0.0	ft	550	0.0	0.0	1.0	1.0	1.0	45
<b>SEEDING IMPLEMENTS</b>												
<b>Row Crop Planter, prepared seedbed</b>												
mounted												
seeding only	rows	500	0.0	0.0	rows	110	0.0	0.0	1.0	1.0	1.0	25
drawn												
seeding only	rows	900	0.0	0.0	rows	200	0.0	0.0	1.0	1.0	1.0	25
seed, fertilizer, herbicides	rows	1,550	0.0	0.0	rows	350	0.0	0.0	1.0	1.0	1.0	25
<b>Row Crop Planter, no-till</b>												
seed, fertilizer, herbicides												
1 fluted coulter/row	rows	1,820	0.0	0.0	rows	410	0.0	0.0	1.0	0.96	0.92	25
<b>Row Crop Planter, zone-till</b>												
seed, fertilizer, herbicides												
3 fluted coulters/row	rows	3,400	0.0	0.0	rows	765	0.0	0.0	1.0	0.94	0.82	35
<b>Grain Drill w/press wheels</b>												
< 2.4 m drill width	rows	400	0.0	0.0	rows	90	0.0	0.0	1.0	1.0	1.0	25
2.4 to 3.7 m drill width	rows	300	0.0	0.0	rows	67	0.0	0.0	1.0	1.0	1.0	25
> 3.7 m drill width	rows	200	0.0	0.0	rows	25	0.0	1.0	1.0	1.0	1.0	25
<b>Grain Drill, no-till</b>												
1 fluted coulter/row	rows	720	0.0	0.0	rows	160	0.0	0.0	1.0	0.92	0.79	35
<b>Hoe Drill</b>												
primary tillage	m	6,100	0.0	0.0	ft	420	0.0	0.0	1.0	1.0	1.0	50
secondary tillage	m	2,900	0.0	0.0	ft	200	0.0	0.0	1.0	1.0	1.0	50
<b>Pneumatic Drill</b>	m	3,700	0.0	0.0	ft	250	0.0	0.0	1.0	1.0	1.0	50