



Range Estimation Table

Approximate maximum ranges (yards / metres): USGA Sand



Receiving Antenna
Omnidirectional



Receiving Antenna
Directive Yagi 90°



Receiving Antenna type and height

Metric		Depth	Omnidirectional Antenna				Directive Yagi Antenna 90			
			1 ^{mt}	2 ^{mt}	3 ^{mt}	5 ^{mt}	1 ^{mt}	2 ^{mt}	3 ^{mt}	5 ^{mt}
	Dry	10 ^{cm}	140	270	320	410	140	370	450	570
		30 ^{cm}	130	250	300	380	130	340	420	530
		60 ^{cm}	120	220	270	340	120	310	380	480
	Wet	10 ^{cm}	130	250	300	380	130	340	420	530
		30 ^{cm}	110	210	250	310	110	280	340	440
		60 ^{cm}	80	150	180	230	80	210	260	330

Receiving Antenna type and height

Imperial		Depth	Omnidirectional Antenna				Directive Yagi Antenna 90			
			3 ^{ft}	7 ^{ft}	10 ^{ft}	17 ^{ft}	3 ^{ft}	7 ^{ft}	10 ^{ft}	17 ^{ft}
	Dry	4 ⁱⁿ	150	290	340	440	150	400	490	620
		12 ⁱⁿ	140	270	320	410	140	370	450	570
		24 ⁱⁿ	130	240	290	370	130	330	410	520
	Wet	4 ⁱⁿ	140	270	320	410	140	370	450	570
		12 ⁱⁿ	120	220	270	330	120	300	370	480
		24 ⁱⁿ	80	160	190	250	80	220	280	360

Note:

- Estimates are presented for dry soil (20% volumetric moisture) and wet soil (50% vol. moist.)
- Environmental conditions may reduce range temporarily (e.g. wet layer on dry soil or vice versa)
- Tree(s) and/or shrubs between Scout and Base may reduce the range by 50%
- In urban environments, static radio noise may hamper receiver sensitivity and decrease range by 10-20%
- Saline soils (4 dS/m and higher) will attenuate signals and lower achievable depth in wet conditions

Disclaimer:

The information in this table is provided as an indicative planning guide, and is not a guarantee or warranty of performance under the stated conditions. Soil Scout Oy accepts no responsibility for errors or the inaccuracy of the information herein.

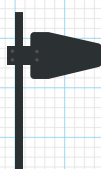


Range Estimation Table

Approximate maximum ranges (metres): for **Wet Soil**



Receiving Antenna
Omnidirectional



Receiving Antenna
Directive Yagi 90°



Receiving Antenna type and height

	Soil texture	Depth of sensor	Omnidirectional Antenna				Directive Yagi Antenna 90			
			6m	9m	12m	15m	6m	8m	12m	15m
Bare Ground	Sand	10cm	410	490	550	610	590	720	820	910
		30cm	330	400	450	490	490	590	680	750
		60cm	250	290	320	350	360	440	500	560
		90cm	180	210	220	240	270	330	370	410
	Loam	10cm	340	400	450	500	490	590	680	760
		30cm	180	210	230	240	270	330	370	410
		60cm	60	40	40	50	110	130	150	160
		90cm	15	20	25	25	40	50	50	50
	Clay	10cm	320	380	430	470	470	570	650	720
		30cm	150	180	190	200	240	280	320	360
		60cm	25	30	40	40	80	100	110	110
		90cm	10	5	5	5	25	25	25	30
1m High Crop (Cereal)	Sand	10cm	250	300	350	380	360	450	530	590
		30cm	200	250	280	310	300	370	440	490
		60cm	150	180	200	210	230	280	330	360
		90cm	110	120	140	130	170	210	240	270
	Loam	10cm	210	260	290	320	310	390	460	510
		30cm	110	130	140	150	180	220	250	280
		60cm	25	30	40	50	70	90	100	110
		90cm	15	20	20	10	30	40	40	40
	Clay	10cm	200	240	270	300	300	370	430	480
		30cm	90	110	110	100	150	190	220	240
		60cm	20	25	30	40	60	70	80	80
		90cm	10	5	5	5	20	20	20	25
3m High Crop (Corn)	Sand	10cm	120	170	190	210	180	250	310	350
		30cm	100	130	150	170	150	210	250	290
		60cm	70	90	110	100	120	160	190	220
		90cm	50	60	50	60	90	120	140	160
	Loam	10cm	110	140	160	180	160	220	270	300
		30cm	60	70	60	60	90	120	150	170
		60cm	15	20	30	40	40	50	60	70
		90cm	10	15	10	10	15	20	25	30
	Clay	10cm	100	130	150	170	150	210	250	290
		30cm	50	50	50	50	80	110	130	140
		60cm	10	20	25	30	30	40	50	50
		90cm	5	5	5	5	10	15	15	20

Sand: Clay 10% / Silt 50% / Sand 40% Loam: Clay 20-30% / Silt 30-70% / Sand 10-40% Clay: Clay 40% / Silt 30-40% / Sand 30-40%



Approximate maximum ranges (yards): for **Wet Soil**

Receiving Antenna type and height

	Soil texture	Depth of sensor	Omnidirectional Antenna				Directive Yagi Antenna 90			
			20ft	30ft	40ft	50ft	20ft	30ft	40ft	50ft
Bare Ground	Sand	4 ⁱⁿ	450	540	600	670	650	790	900	1000
		12 ⁱⁿ	360	440	490	540	540	650	740	820
		24 ⁱⁿ	270	320	350	380	390	480	550	610
		36 ⁱⁿ	200	230	240	260	300	360	400	450
	Loam	4 ⁱⁿ	370	440	490	550	540	650	740	830
		12 ⁱⁿ	200	230	250	260	300	360	400	450
		24 ⁱⁿ	70	40	40	50	120	140	160	170
		36 ⁱⁿ	20	20	30	30	40	50	50	50
	Clay	4 ⁱⁿ	350	420	470	510	510	620	710	790
		12 ⁱⁿ	160	200	210	220	260	310	350	390
		24 ⁱⁿ	30	30	40	40	90	110	120	120
		36 ⁱⁿ	10	10	10	10	30	30	30	30
3ft High Crop (Cereal)	Sand	4 ⁱⁿ	270	330	380	420	390	490	580	650
		12 ⁱⁿ	220	270	310	340	330	400	480	540
		24 ⁱⁿ	160	200	220	230	250	310	360	390
		36 ⁱⁿ	120	130	150	140	190	230	260	300
	Loam	4 ⁱⁿ	230	280	320	350	340	430	500	560
		12 ⁱⁿ	120	140	150	160	200	240	270	310
		24 ⁱⁿ	30	30	40	50	80	100	110	120
		36 ⁱⁿ	20	20	20	10	30	40	40	40
	Clay	4 ⁱⁿ	220	260	300	330	330	400	470	520
		12 ⁱⁿ	100	120	120	110	160	210	240	260
		24 ⁱⁿ	20	30	30	40	70	80	90	90
		36 ⁱⁿ	10	10	10	10	20	20	20	30
9.8ft High Crop (Corn)	Sand	4 ⁱⁿ	130	190	210	230	200	270	340	380
		12 ⁱⁿ	110	140	160	190	160	230	270	320
		24 ⁱⁿ	80	100	120	110	130	170	210	240
		36 ⁱⁿ	50	70	50	70	100	130	150	170
	Loam	4 ⁱⁿ	120	150	170	200	170	240	300	330
		12 ⁱⁿ	70	80	70	70	100	130	160	190
		24 ⁱⁿ	20	20	30	40	40	50	70	80
		36 ⁱⁿ	10	20	10	10	20	20	30	30
	Clay	4 ⁱⁿ	110	140	160	190	160	230	270	320
		12 ⁱⁿ	50	50	50	50	90	120	140	150
		24 ⁱⁿ	10	20	30	30	30	40	50	50
		36 ⁱⁿ	10	10	10	10	10	20	20	20

Sand: Clay 10% / Silt 50% / Sand 40% **Loam:** Clay 20-30% / Silt 30-70% / Sand 10-40% **Clay:** Clay 40% / Silt 30-40% / Sand 30-40%

Note:

- Estimates are presented for wet soil (50% volumetric moisture). Dry soils provide 30-40% better range
- Environmental conditions may reduce range temporarily (e.g. rainwater on crop, wet layer on dry soil...)
- Tree(s) and/or shrubs between Scout and Base may reduce the range by 50%
- In urban environments, background radio noise may hamper receiver sensitivity and decrease range by 10-20%
- Saline soils (4 dS/m and higher) or clay contents exceeding 60% will attenuate signals and lower achievable depth
- Lowering receiving antenna down to 3 m will cut the range approx. 40% compared to the 6 m height values

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