One 80 m Inv L Experience

Loosely based on ANTENNA BOOK information, I put up an Inv L for 80 using 46 ft of 6 ft Al tubing (43+3 from junk box) commonly available, starting at 2.125inch OD going down to 1.25 inch . One set of guys was put at 30 ft. The top wire is 55 ft of zip line pair (again junk box) sloping down to 20 ft at the end. Radial system consists of 6 elevated (~ 8 ft high typical) radials of 57 ft (insensitive to exact length). My soil appears to be very poor, which motivated the elevation (this is subject to much discussion). The system is resonant at about 3 MHz (X=0) with smallish R. At 3.55 MHz it has a R of about 50 and a significant inductive reactance that can be cancelled by a simple series air variable capacitor adjusted to about 150 mfd at the base. It is fed by RG8 with a current choke. So this longer-than-resonance antenna has the charm of needing only a very simple matching network (1 series cap) and it can be adjusted within the band by shortening the top section and retuning the capacitor. Around the chosen resonant frequency, a bandwidth for 2:1 SWR is about 150 kHz. A compromise length of top section can allow switching between CW and SSB bands with only a change in the capacitor setting, albeit with some modest suffering of SWR increase in both bands, but still under 2:1 over a useful range. It was put up to finish off 80 m DXCC this season and has allowed working 90 countries in 4 months running about 600 watts, mostly CW. I think this is a good antenna, but not necessarily a great antenna.

As a final bonus, if you simply tack on about 65 ft of additional top wire, it can be tuned to 160 meters using just the same 25-500 mfd variable capacitor. However you will have to play with the length of the top section and will also have a rather more modest bandwidth. This will probably no longer be called a good antenna.

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