

THE COST OF OWNERSHIP OF FEEDLOT POLES

The carbon-to-nitrogen (C:N) ratio of wood, depending on species, is between 200:1 and 500:1. It is therefore deficient in nitrogen in terms of decay susceptibility because carbon usage (the major constituent of wood) is limited until the C:N ratio of the wood drops to 15:1. Feedlot poles, however, are required to undergo service in the most aggressive decay environment in the world. Decay is aggravated because several factors that promote wood rot all come into play in a feedlot. Livestock urine and faeces both contribute large quantities of nitrogen to the soil profile. The pH of the soil is also lowered to the optimal range for fungal growth. Constant moisture depletes the pole preservative until its concentration falls below the toxic threshold level, and that is when the massive nitrogen availability immediately enables decay fungi to begin to rapidly mineralise the wood. Because of this combination of effects, feedlot owners worldwide comprise the sector of end-users whose preserved wooden poles have the shortest service-life expectancy. Unfortunately, there are no better-performing pole preservatives than the two (creosote and CCA) currently in use and none can even become available in the foreseeable future because none are undergoing the lengthy service trials necessary for their validation.

The Biotrans Pole Sleeve (BPS) was developed as a barrier protection system to isolate preserved wooden poles from the above combination of factors that come into play in soil, and it has recently set the benchmark for a new SABS specification in the field of barrier protection systems. An H4 pole with a BPS is guaranteed for 40 years and the cost-benefit analyses below show the savings (per 1,000 poles) that a feedlot accrues with BPS usage.

KARAN BEEF COST/BENEFIT ANALYSIS OF BPS USAGE

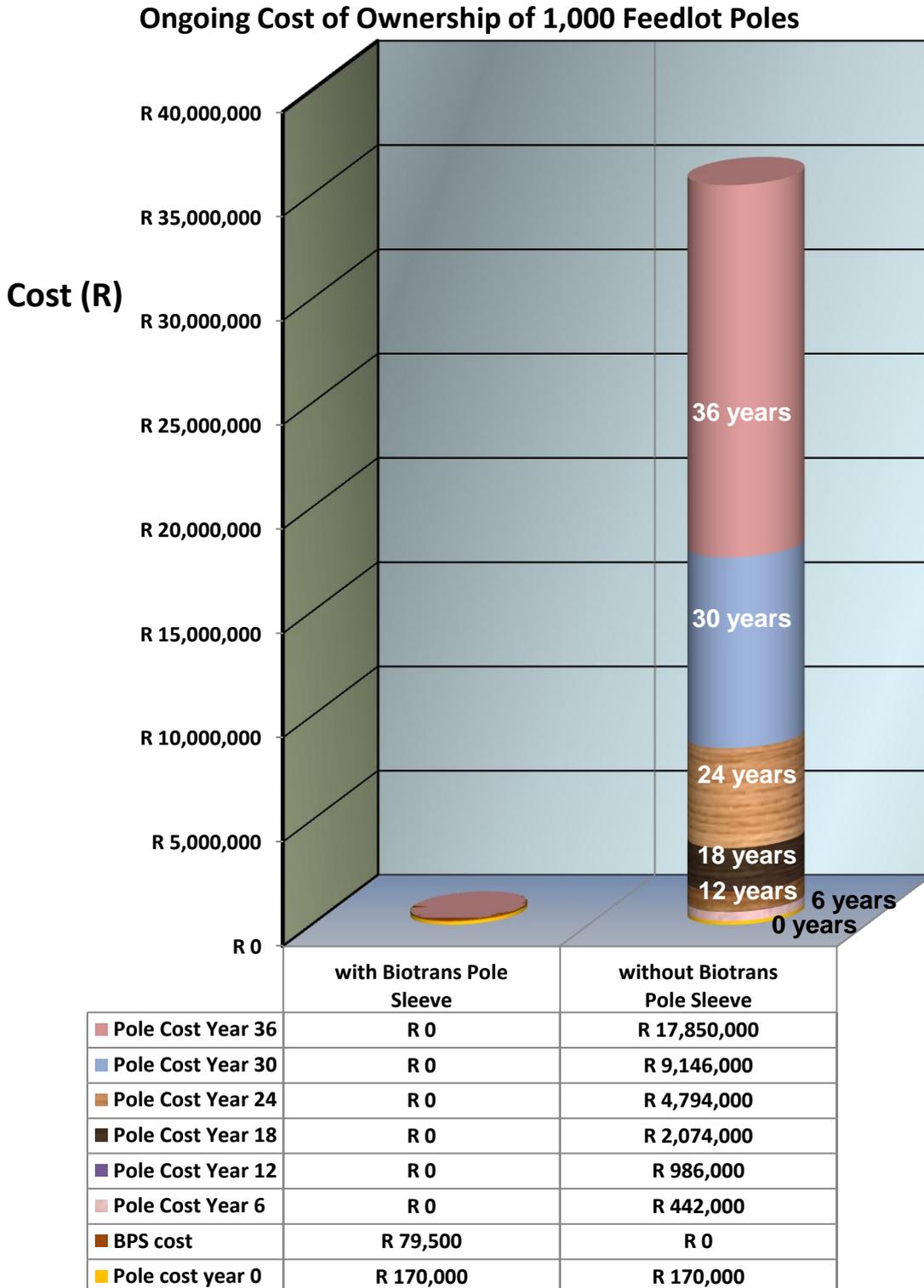
- a) Cost of an H5 pole = R170 (February 2015)
- b) Maximum service life of pole: 80% fail in 6 years, and the other 20% may last 24 years
- c) Pole cost historically doubles in 6 yrs (was R115 at end of 2011; was R170 in Feb., 2015)
- d) Cost of 1.2m Biotrans Pole Sleeve (BPS) to soil level = R79-50 (August 2015)

ITEM	COST OF H5 POLES WITHOUT BPS (R)			COST OF H5 POLES WITH BPS (R170 + R79-50)	CUMULATIVE SAVINGS WITH BPS ADOPTION (R)
	800 poles that rot within 6 years	200 poles that last for 24 years	RUNNING TOTAL		
YEAR 0:- 1,000 poles @ R170	136,000	34,000	170,000	249,500	- 79,500
YEAR 6:- 800 poles @ R340	272,000	-	442,000	-	362,500
YEAR 12:- 800 poles @ R680	544,000	-	986,000	-	906,500
YEAR 18:- 800 poles @ R1,360	1,088,000	-	2,074,000	-	1,994,500
YEAR 24:- 1,000 poles @ R2,720	2,176,000	544,000	4,794,000	-	4,714,500
YEAR 30:- 800 poles @ R5,440	4,352,000	-	9,146,000	-	9,066,500
YEAR 36:- 800 poles @ R10,880	8,704,000	-	17,850,000	-	17,770,500

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It is worth noting that the above analysis does not include savings when H4 poles are used instead of H5 poles; it does not account for labour costs etc., incurred with ongoing premature pole failure and replacement, and it does not account for stampede losses in catastrophic multiple failures of rotting poles without BPS. The results of the above analysis are illustrated in the histograms below.

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It was noted during a site visit on 2nd March 2015 that the manure levels in cattle pens ultimately reached the level of the lower wires in the fences. Obviously, the above-mentioned decay factors all manifest themselves in the feedlot poles to that level, i.e., 30cm above the soil surface. The BPS required to protect a pole in manure must therefore reach the bottom wire of the poles.

A 1.5 metre manure-level BPS costs R91-56 excl. VAT and the following cost/benefit analysis shows that accumulated savings (per 1,000 poles) of R17,758,440 with the 1.5 metre BPS are only slightly less than those of R17,770,500 accrued with the 1.2 metre soil-level BPS.

a – c) as inputs above

d) Cost of 1.5m Biotrans Pole Sleeve (BPS) to manure level at lowest fence-wire = R91-56

ITEM	COST OF H5 POLES WITHOUT BPS (R)			COST OF H5 POLES WITH BPS (R170 + R91-56)	CUMULATIVE SAVINGS WITH BPS ADOPTION (R)
	800 poles that rot within 6 years	200 poles that last for 24 years	RUNNING TOTAL		
YEAR 0:- 1,000 poles @ R170	136,000	34,000	170,000	261,560	- 91,560
YEAR 6:- 800 poles @ R340	272,000	-	442,000	-	350,440
YEAR 12:- 800 poles @ R680	544,000	-	986,000	-	894,440
YEAR 18:- 800 poles @ R1,360	1,088,000	-	2,074,000	-	1,982,440
YEAR 24:- 1,000 poles @ R2,720	2,176,000	544,000	4,794,000	-	4,702,440
YEAR 30:- 800 poles @ R5,440	4,352,000	-	9,146,000	-	9,054,440
YEAR 36:- 800 poles @ R10,880	8,704,000	-	17,850,000	-	17,758,440