

FACTSHEET

Poultry Litter Spreading Costs & Replacement Fertilizer Evaluations

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Spreading Costs: The availability of spreading equipment which can spread PL both uniformly and in a timely manner - hence the associated spreading costs themselves - are most limiting factors for PL use as a replacement fertilizer. The spreading cost model (Table and Figure below) demonstrates the manufactured Artek and Stoltzfus "spinner" type spreaders - capable of high volume loads and/or wide swath/spreading patterns - results in fewer and/or timelier passes over the field, hence much lower spreading costs.

Equipment Spreading Cost Model & Estimates

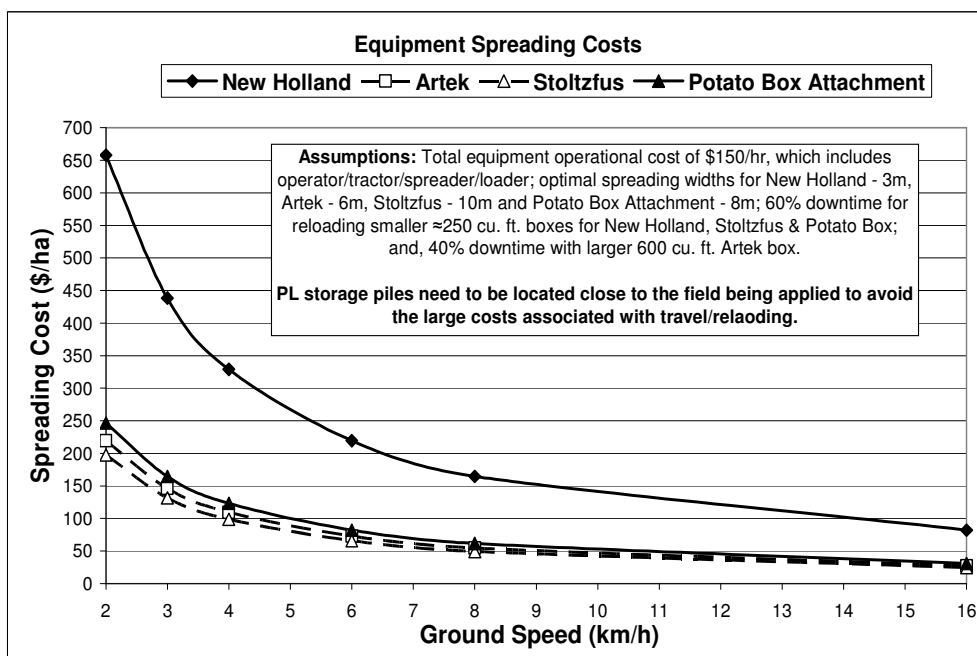
Note: highlighted areas are model input variables

Tractor/Spreader/Operator Costs = \$75/hr Loader/Excavator/Operator Costs = \$75/hr

Spreader	"Aged" Density				Applications					Speed		Pass width		Distance	Coverage	Equipment		Product Spreading Costs				
	kg/m ³	t/ha	m ³ /ha	ton/ac	yds ² /ac	km/hr	miles/hr	m	km/ha	ha/hr**	\$/hr	\$/ha	\$/t*			\$/m ³	\$/ton	\$/yd ³	\$/ac	\$/ha		
New Holland	380	10.0	26	4.5	15	9.0	5.6	3	3.33	1.08	150	139	13.89	5.28	12.63	4.09	60	146				
Artek	380	10.0	26	4.5	15	9.0	5.6	6	1.67	3.24	150	46	4.63	1.76	4.21	1.36	20	49				
Stoltzfus	380	10.0	26	4.5	15	9.0	5.6	10	1.00	3.60	150	42	4.17	1.58	3.79	1.23	18	44				
Potato Box Attach.	380	10.0	26	4.5	15	9.0	5.6	8	1.25	2.88	150	52	5.21	1.98	4.73	1.53	22	55				

* According to Stennes (1992) spreading costs were \$14.05/t with small Hew Holland paddle-type spreader; in to days costs ≈\$15/t for a the New Holland spreader is not much more.

** less 60% for travel/loading smaller box = 250 cu ft New Holland, Stoltzfus & Potato Box; and, 40% with much larger 600 or 700 cu ft Artek box.



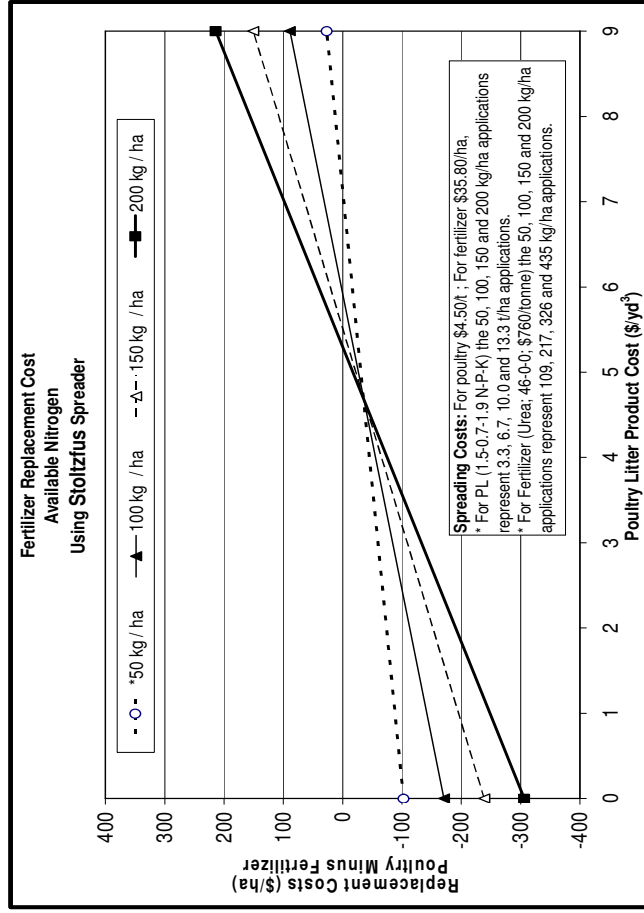
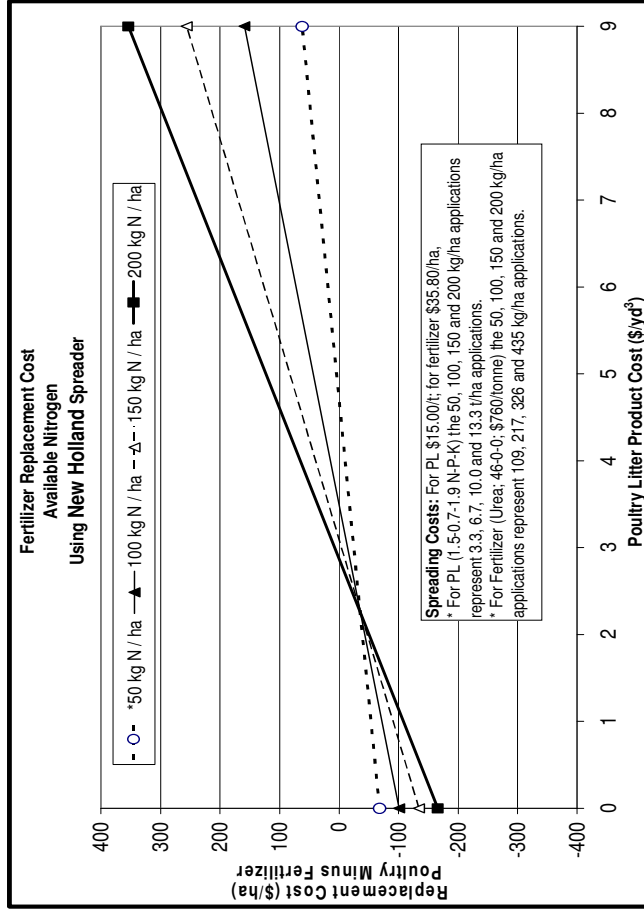
Appropriate Speeds:

When it comes to spreading costs, speed is most determinate. Tractor ground speed is the most common means to control field application weights. For heavier applications one can go slower; and, for lighter applications one can go faster; and, this is in addition to numerous other spreader application control setting, such as table/PTO speeds and/or guillotine gate openings. The figure to the left shows that with ground speed <4 km/h spreading costs can quickly escalate; however, there also comes a point where the returns associated with greater speed (eg. ≈8 km/h) will begin to diminish.

Spreader Type/Model Unit Retail Values - March 2008

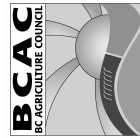
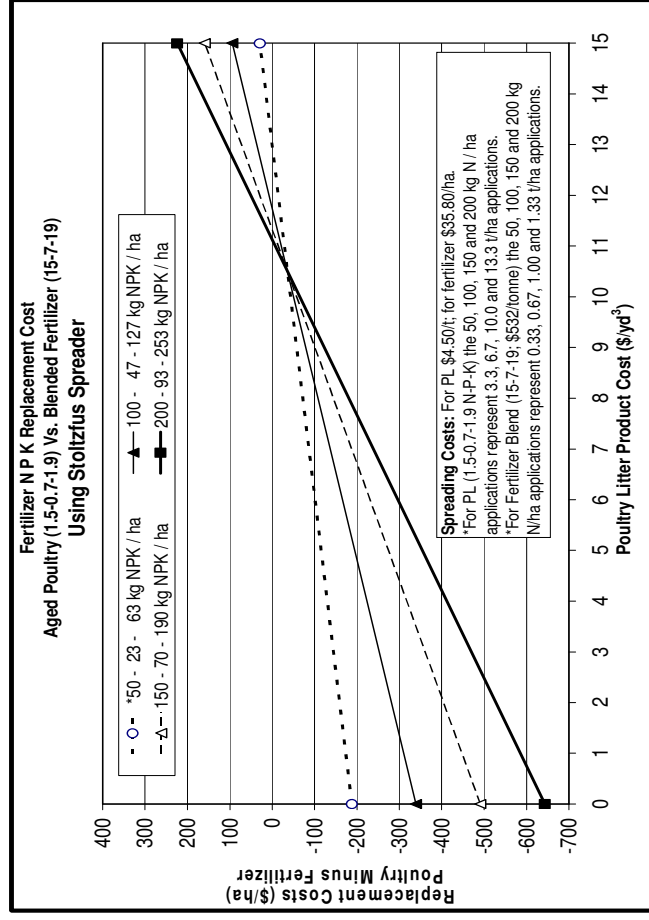
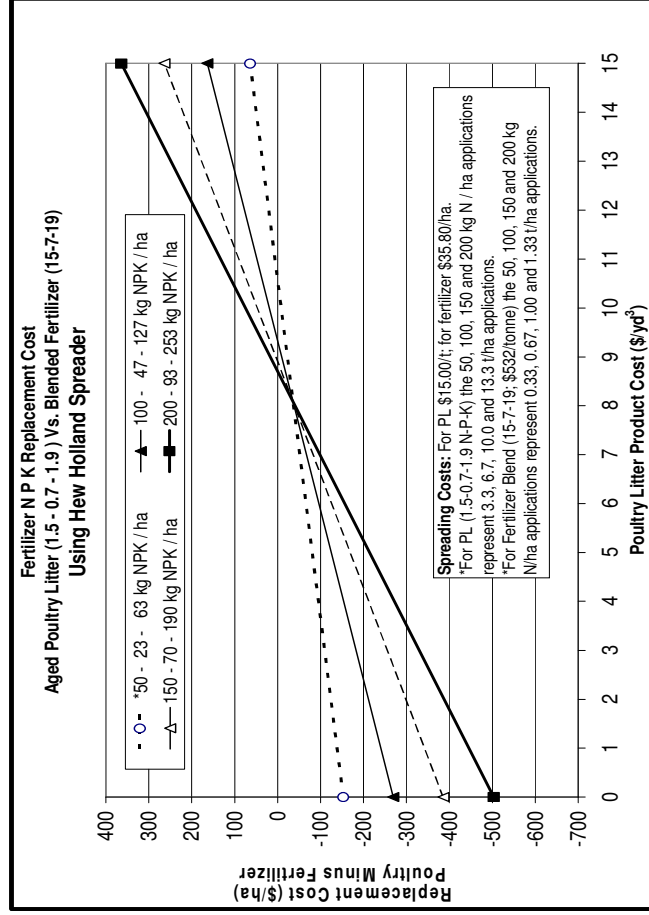
Type/Model	Box Size (cu. ft.)	Cost (\$)	Dealer
New Holland 195	272	25,000 CDN	Rollins: BC www.newholland.com
Artek CB600	600	70,000 CDN	Avenue Farm Machinery: BC www.artexfab.com
Stoltzfus 5010	137	13,105 US	Factory Direct: Pennsylvania
Stoltzfus 8016	223	19,700 US	
Stoltzfus 8020	414	\$23,900 US	www.stoltzfusmfg.com

2008 Fertilizer Replacement Evaluation: There are two scenarios that need consideration when evaluating the PL fertilizer replacement value. One is the Delta situation in which soil test phosphorus and potassium are already in the high to very high range. In this case the aged PL is used to supply nitrogen to the current year's crop. The second scenario may occur in fertilizing a soil with low soil test phosphorus and potassium levels or in land reclamation where the growing medium is low in all nutrients. **Note: the following fertilizer replacement evaluations do not include the costs associated with PL storage.**



Scenario A; High P & K Soil Test: For high P & K soil test results, the benefits in using PL fertilizer is mostly related to its N supply in crop production. In this case the spread fertilizer value of urea (46-0-0 at \$760/t) is compared to spread PL using either a New Holland (NH) or Stoltzfus (ST) spreader. The figures above presents fertilizer replacement cost/benefit analysis using 50, 100, 150 and 200 kg/ha available N applications. For a New Holland spreader (left graph) the PL litter will begin to become cost effective (values below zero on the graph) for all applications when the delivered PL cost to the producer is below $\approx \$3.00/\text{yd}^3$; and, below $\approx \$5.00/\text{yd}^3$ when using a Stoltzfus spreader (right graph). Producers using a New Holland paddle-type spreader need to show discretion when the PL is purchased above $\approx \$2.50/\text{yd}^3$; however, for producers using a Stoltzfus spreader the margin is almost twice that at $\approx \$4.50/\text{yd}^3$; and, the fertilizer replacement cost benefits ever greater - $\approx \$100/\text{ha}$ for 100 kg/ha N application - when the PL product cost is $\approx \$2.50/\text{yd}^3$.

Scenario B; Low P & K Soil Test: For low P & K soil test results, the cost benefits in using PL fertilizer are related to its total NPK supply in crop production. In this case the spread fertilizer value of a custom blended fertilizer (15-7-19 at \$532/t) is compared to that of PL (1.5-0.7-1.9) using either a NH or ST spreader. The figures below presents this analysis using 50, 100, 150 and 200 kg/ha available N applications vs. the PL product costs to the producer. When using a New Holland spreader (left graph) the use of PL as a replacement fertilizer will begin to become cost effective for all applications when the delivered cost is below $\approx \$8.50/\text{yd}^3$; and, below $\approx \$11.00/\text{yd}^3$ when using a Stoltzfus spreader (right graph). For producers using a New Holland paddle-type spreader the fertilizer replacement cost benefit is $\approx \$200/\text{ha}$ for a 100 kg/ha N application when the delivered PL product cost is $\approx \$2.50/\text{yd}^3$. For producers using a Stoltzfus spreader the same fertilizer replacement cost benefit is $\approx \$250/\text{ha}$ when the delivered PL product cost is $\approx \$2.50/\text{yd}^3$.



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