

Getting value from fertilising Monaro pastures.



Doug Alcock

- Focus on Basalt soils
- Use GrassGro to quantify the seasonal risks.
- “Speculate” on how different sources of sulfur might perform.
- Interaction between fertility pasture type and genetics.



Value of fertilisers

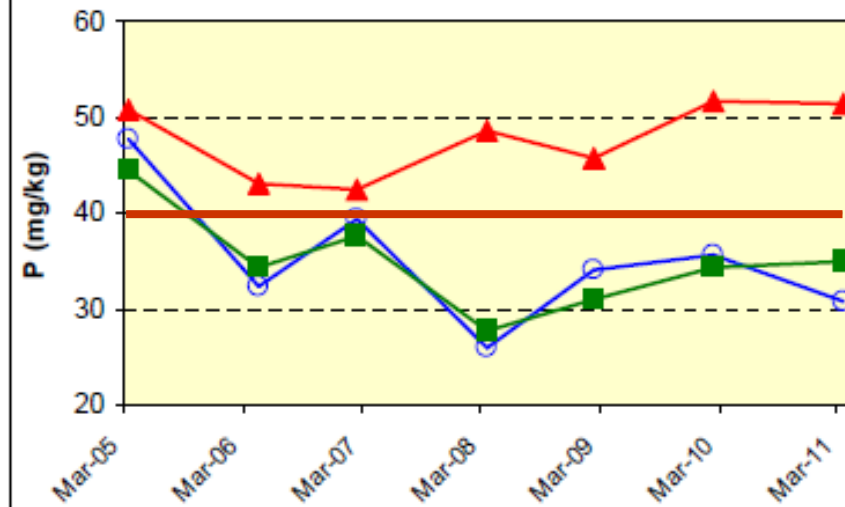
- More herbage grown
- Better quality herbage (legumes)
- Higher... stocking rate / animal performance.

ECONOMICS

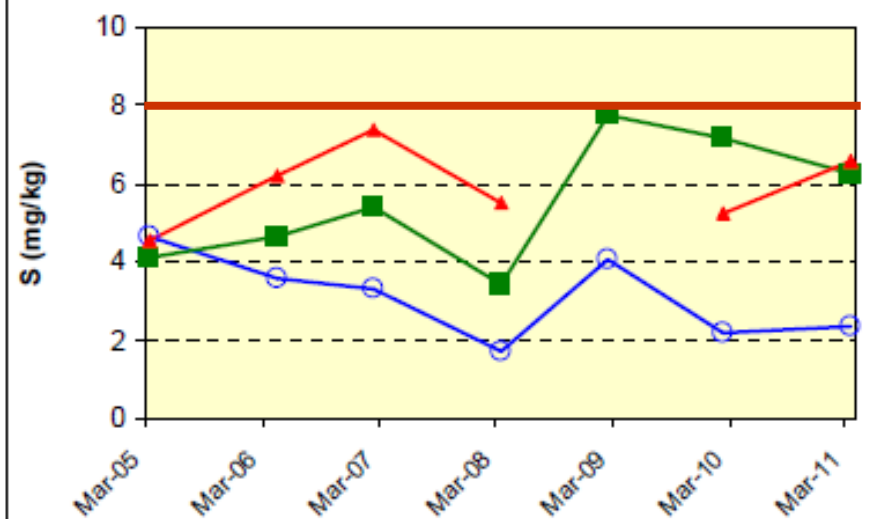


Bungarby Soil Fertility

Phosphorus



Sulphur



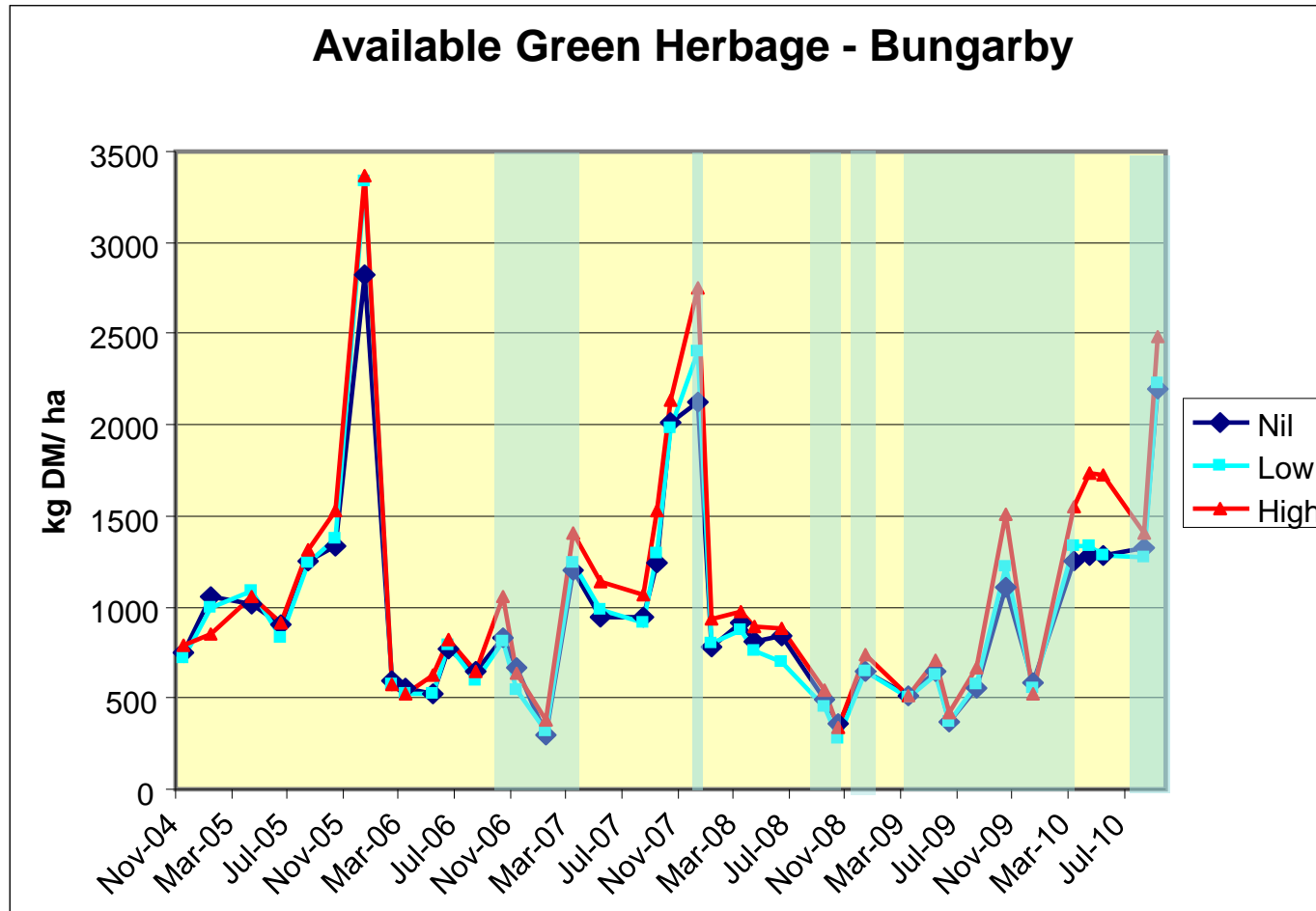
— Super + Gypsum

— Gypsum

— Nil



Pasture Growth

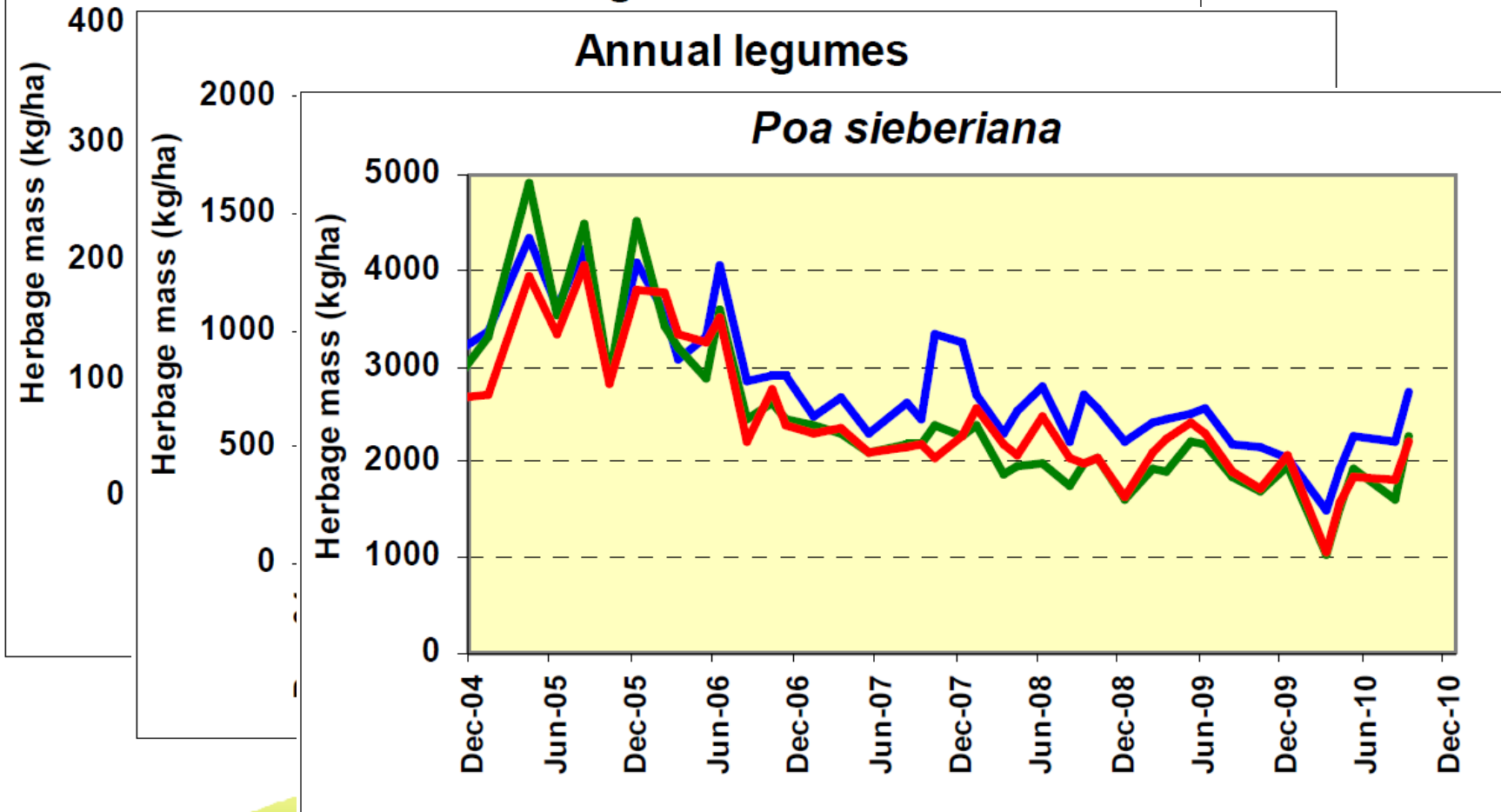


Herbage Quality

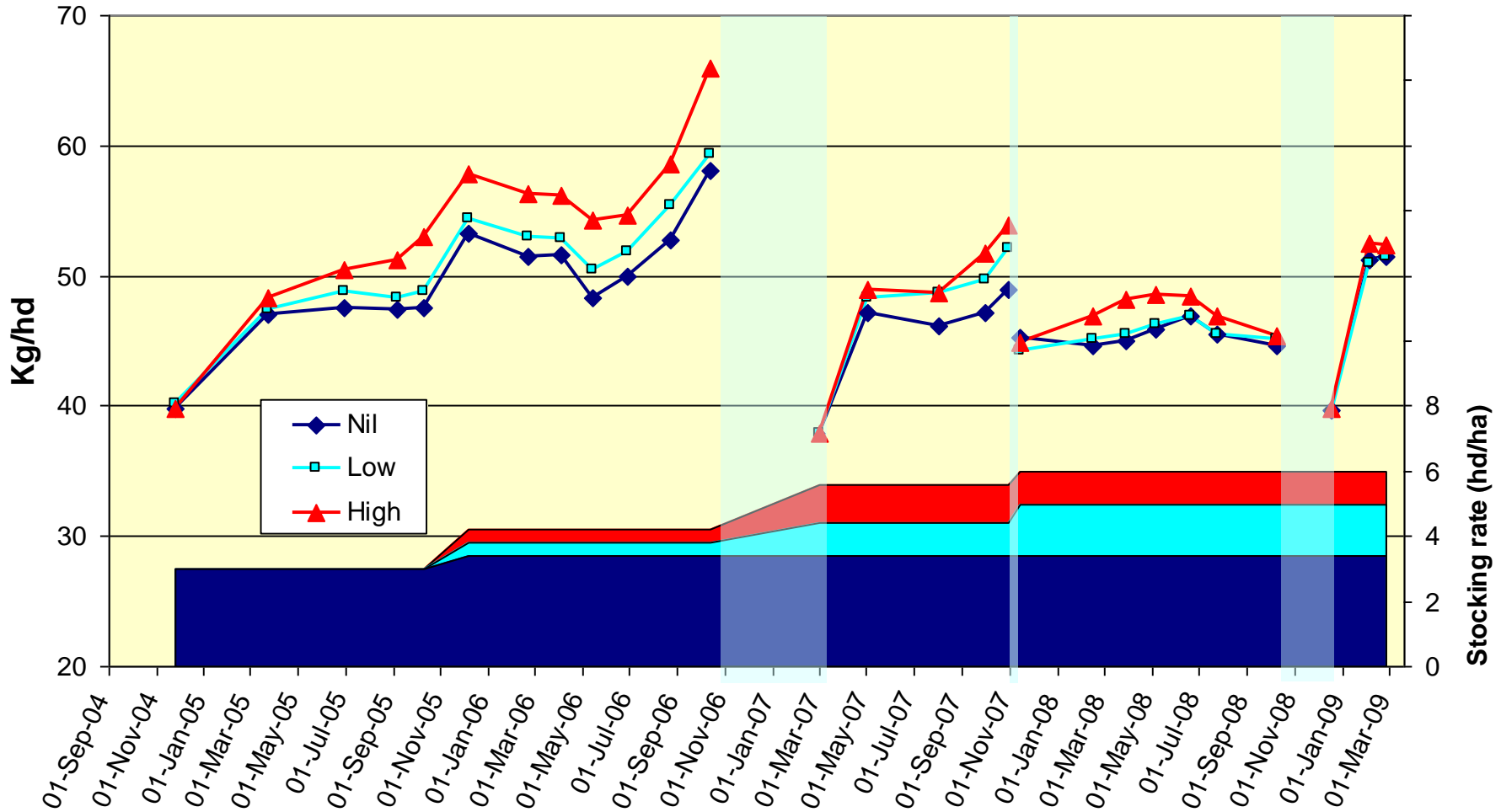
Annual grasses

Annual legumes

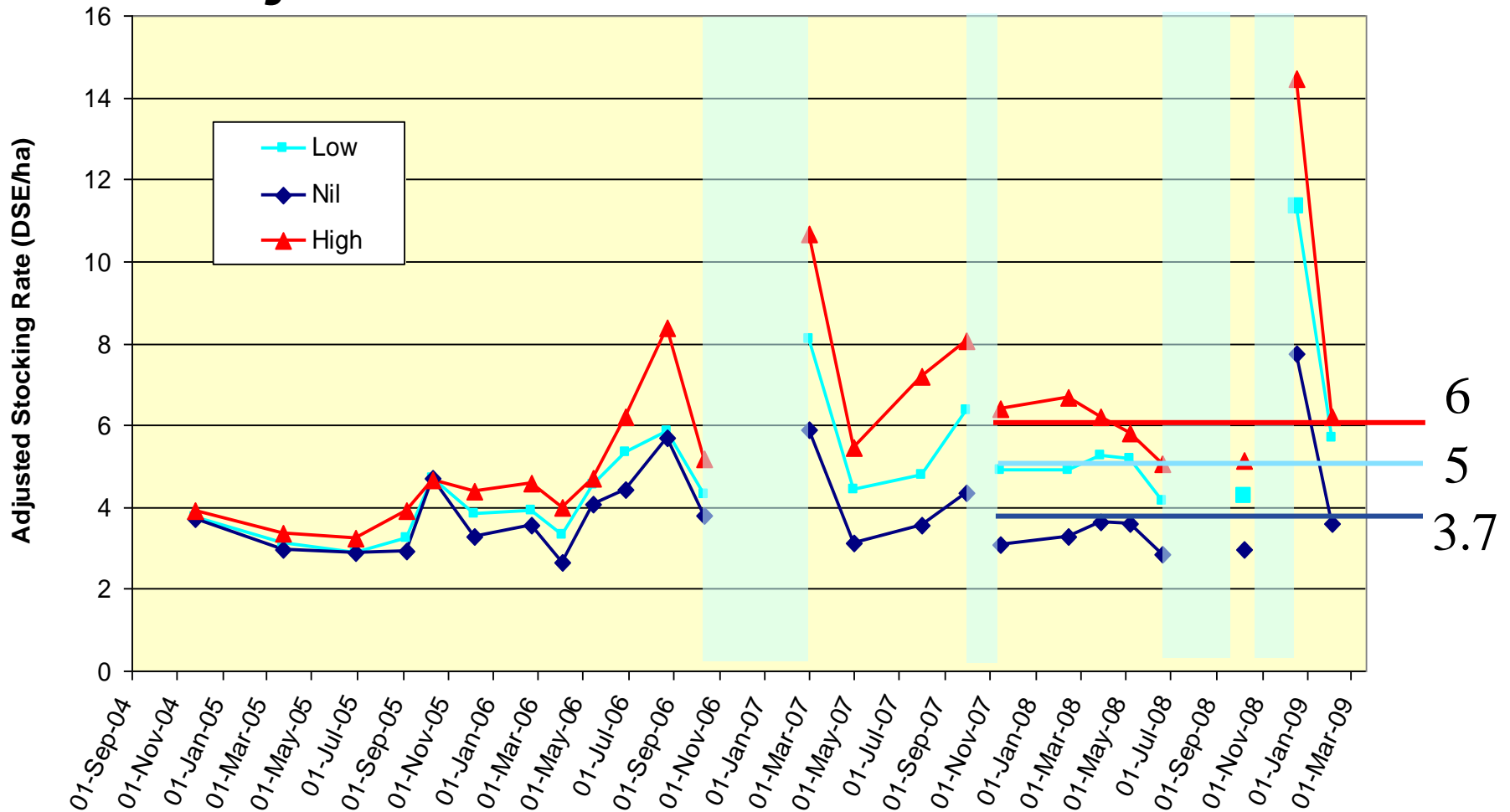
Poa sieberiana



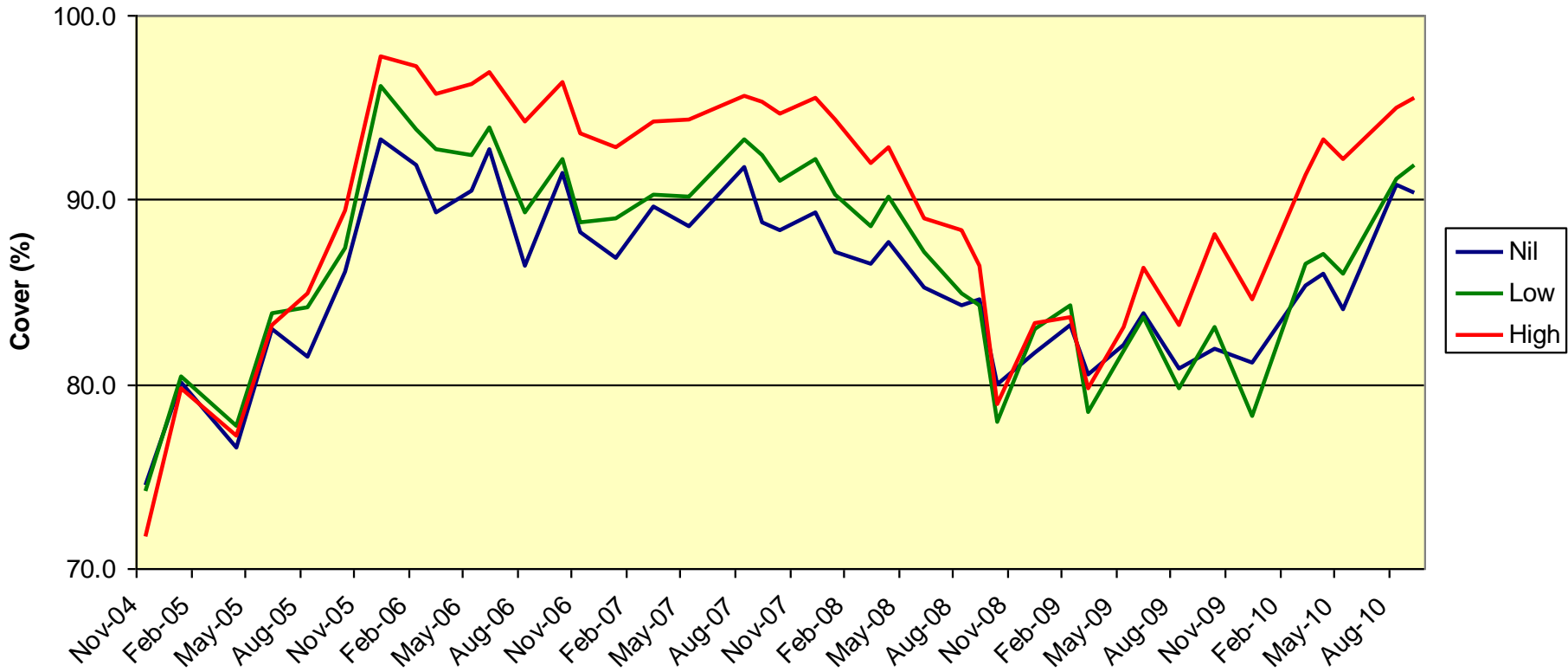
Animal Performance / Stocking Rate



Adjusted DSE's



Ground Cover - Bungarby



GrassGro Models

- Mix of Poa, Austrostipa, legumes
- Fertility scalar set to mimic trial production
 - 0.75, 0.86, 0.93
- Stocking rates
 - 3.7, 5, 6 dse/ha.



Fertiliser Economics

- Usually assume average production
 - What if you get some crook years?
- Use GrassGro to overlay production risk.
 - Run 1971 – 2012 use the distribution of annual profit to evaluate risks.
 - Ewe system as per the seasonal updates using bloodline 3 from recent W-trial



Assumptions

- Compare cumulative marginal profit
 - (vis native & unfertilised.)
- Stocking rate half way year one, full rate year 2.
- Range of fertiliser strategies



Questions

- Effect of S, P or S&P?
- Choice of product?
- Effect if S fluctuates with biennial Sulphate S application.
- Effect of livestock genetics
- Effect of Costs / Prices.



Fertilisers costed

Name	P content	S content	Cost/tonne
Gypsum	-	16%	\$95
Sulphur Bentonite		90%	\$675
Single Super	8.8%	11%	\$330
SuPer26S	7%	26%	\$406

- All costs are as delivered in bulk
- Spreading Cost \$5.70/ha



Rates used for P & S

- 11 kg of P for 4 yrs then 7 kg P thereafter.
- 20 kg of S annually.



Fertiliser Strategies / Rates (kg/ha)

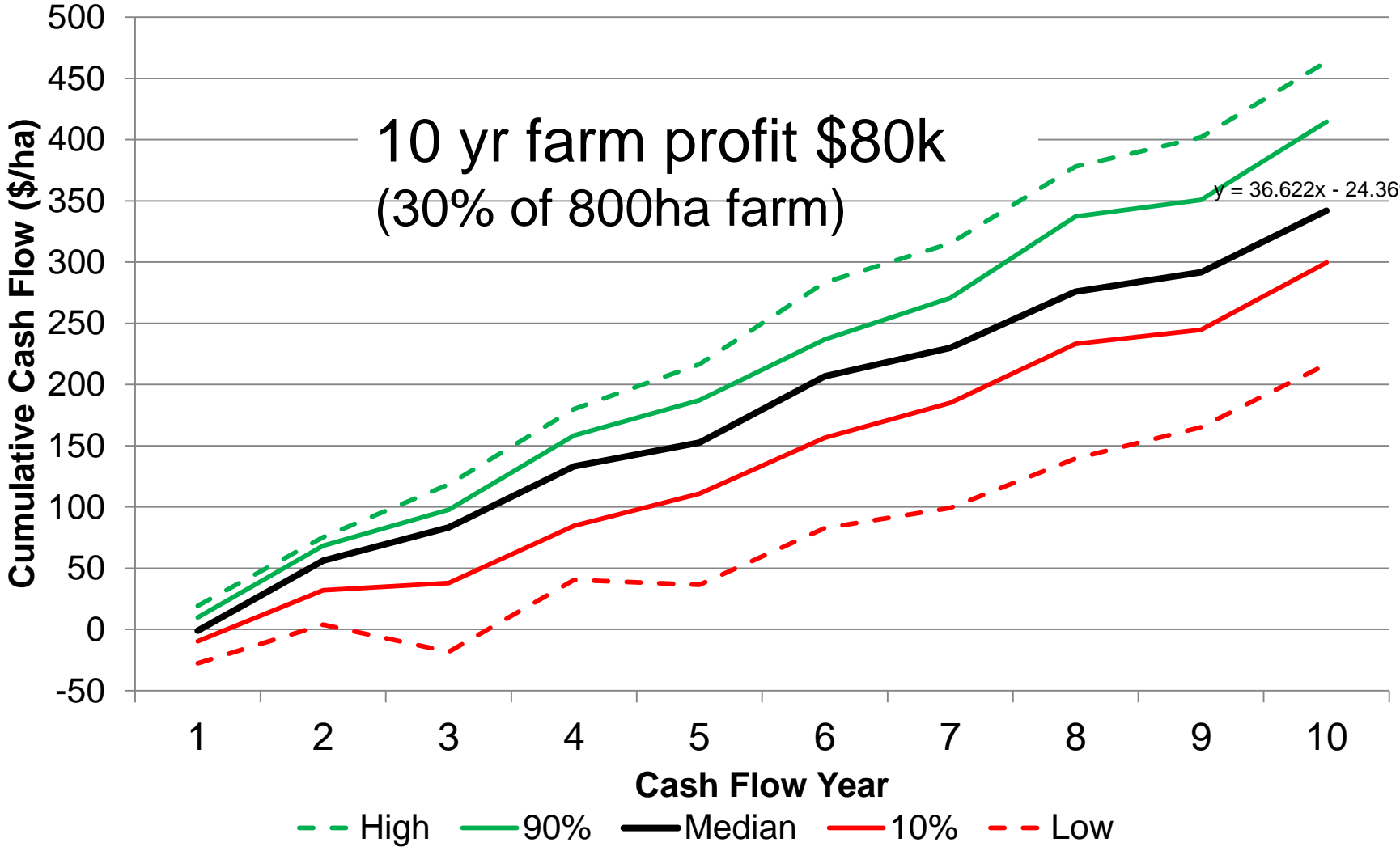
	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10
Gypsum	250		250		250		250		250	
Sulphur Bentonite	66			66			66			66
SuPer26S	157	157	157	100	100	100	100	100	100	100
“ “	314		314		200		200		200	
Single Super + S Bentonite	125 +66	125	125	125 +66	160		160 +66		160	+66



Cumulative Cashflow for use of Gypsum.

10 yr farm profit \$80k
(30% of 800ha farm)

$$y = 36.622x - 24.369$$



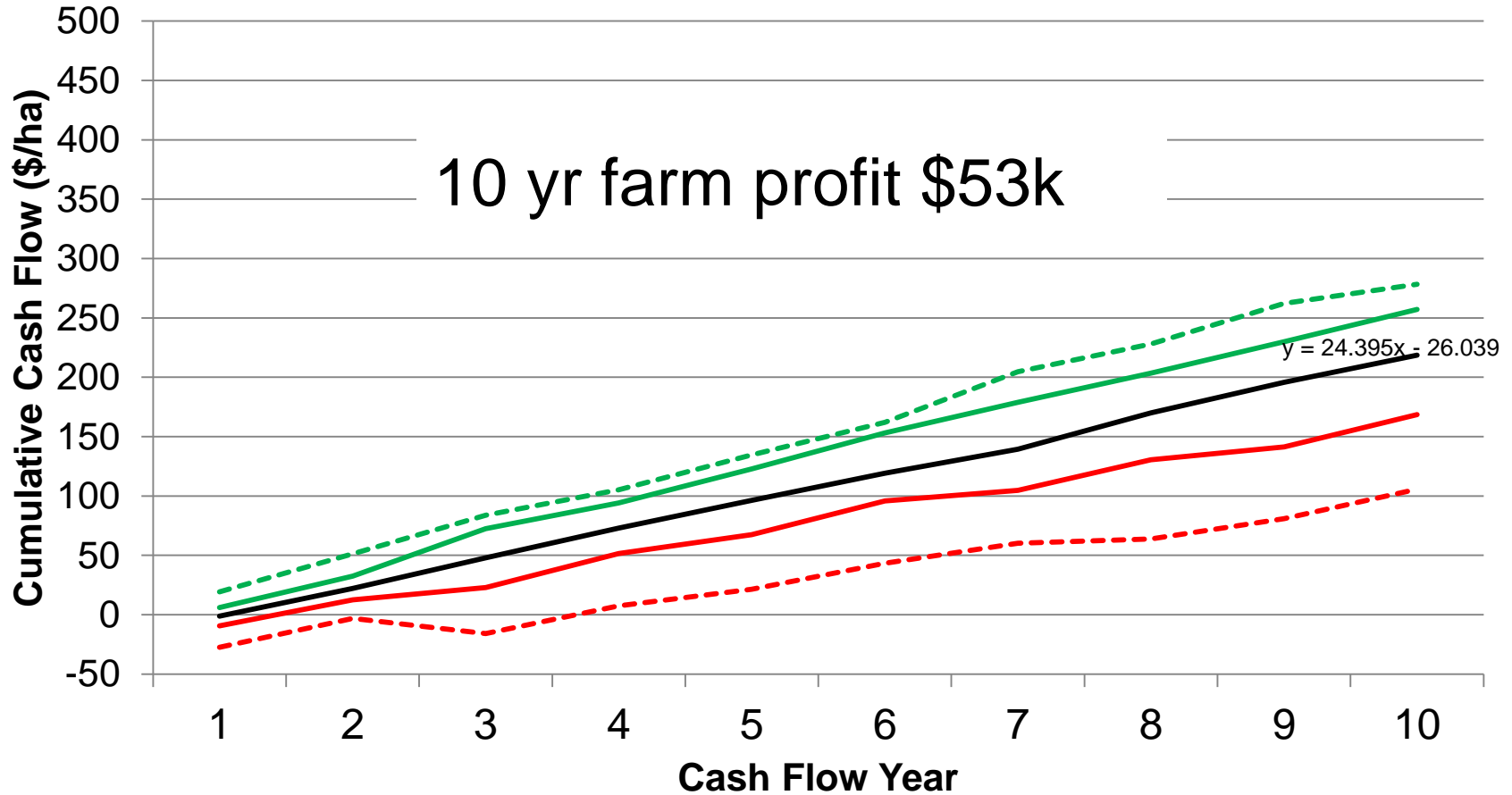
What if the Sulfur leaches between applications?

■ Assumptions.

- Each intermediate year reverts back to yr1 stocking rate
(equal to what might happen if half the farm was fertilised every year)



Cumulative Cashflow with low response in intermediate years



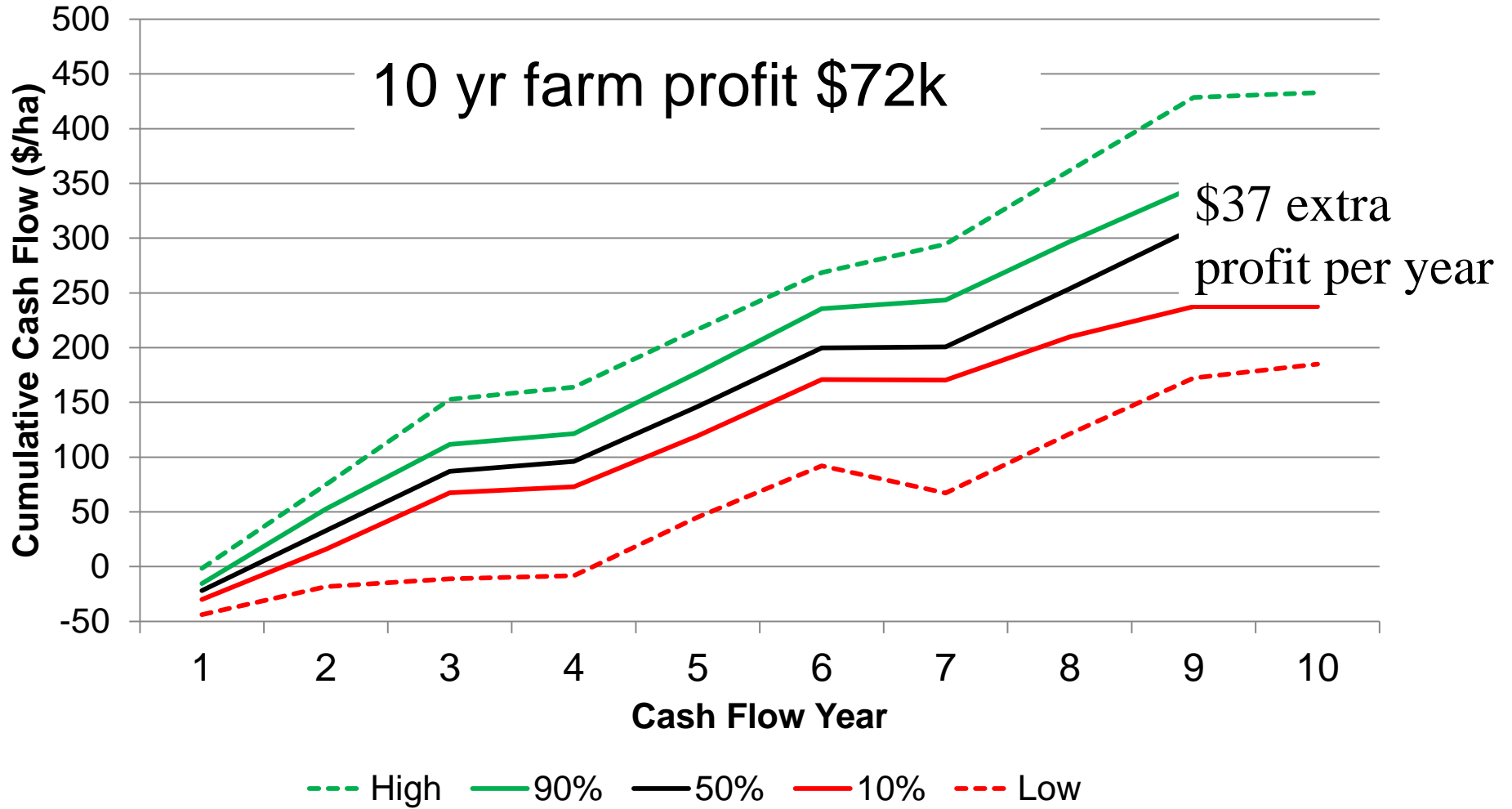
--- High — 90% — 50% — 10% - - - Low Linear (50%)



Using Sulphur Bentonite to maintain a more consistent Sulphur supply.



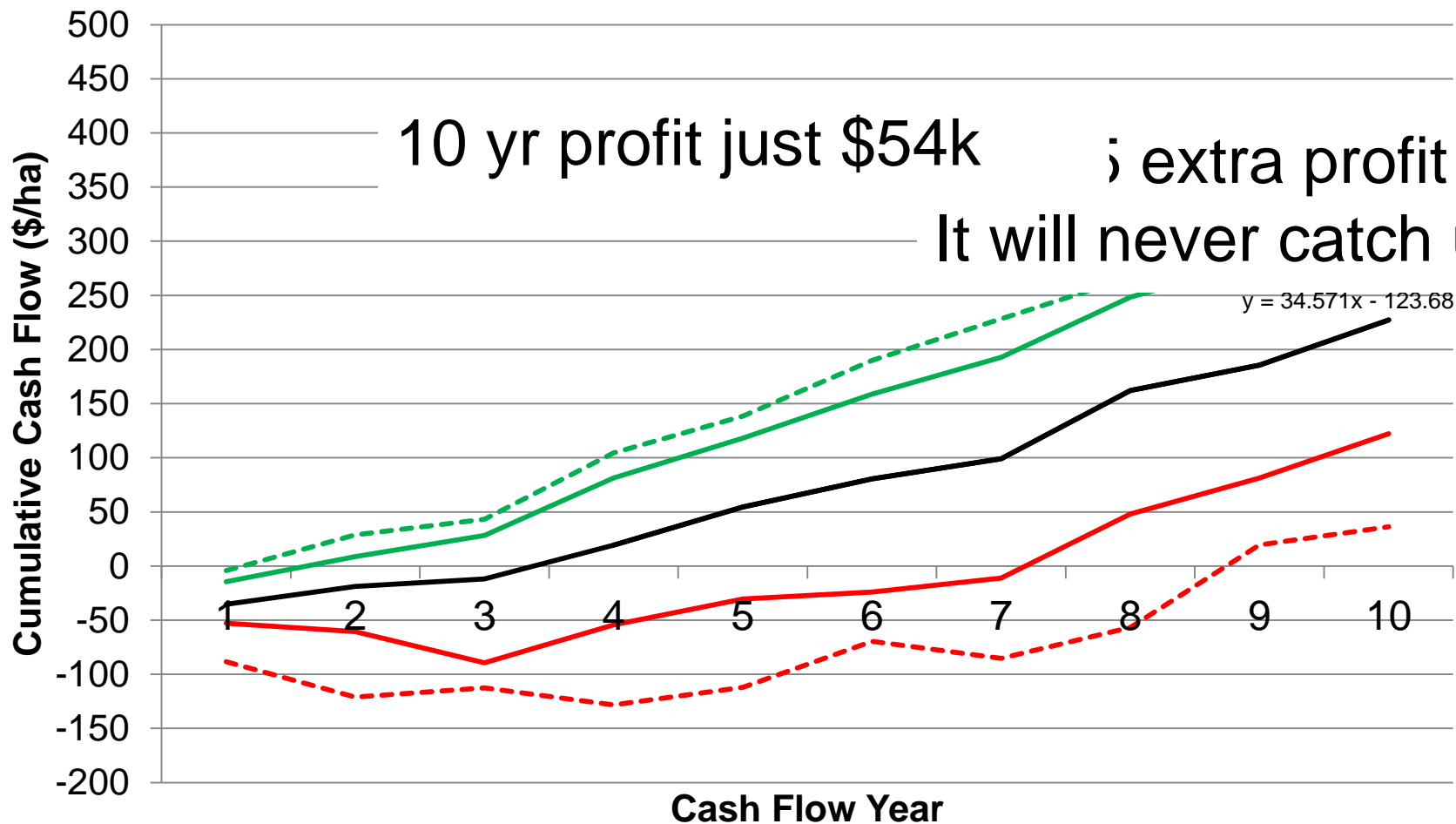
Cumulative Cashflow with low response in intermediate years



Let's fix up Phosphorous too



Cumulative Profit Annual SuPer26S



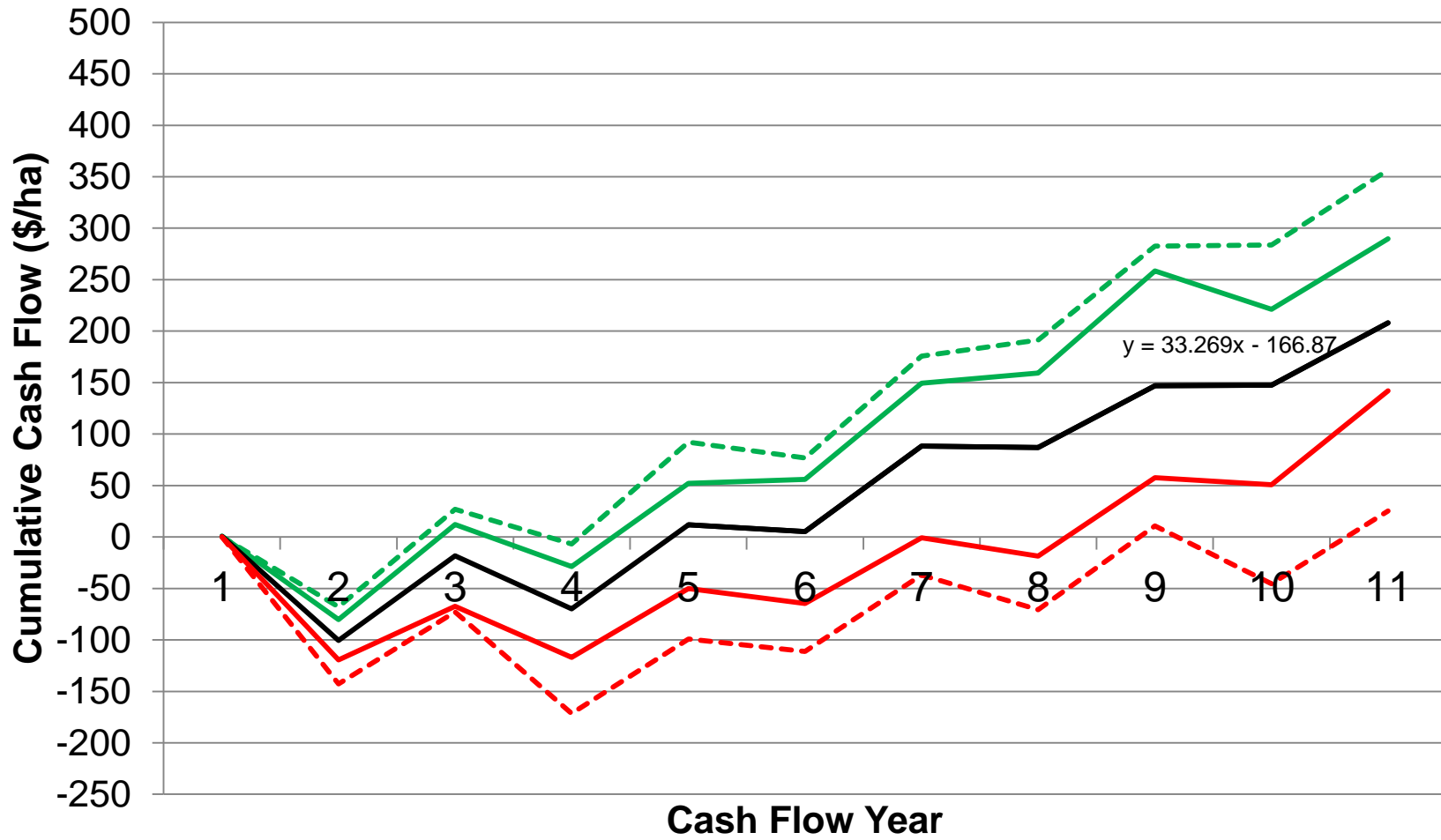
--- High — 90% — 50% — 10% - - - Low — Series6 Linear (Series6)



What about saving spreading costs by biennial spreading?



Cumulative Profit Biennial SuPer26S



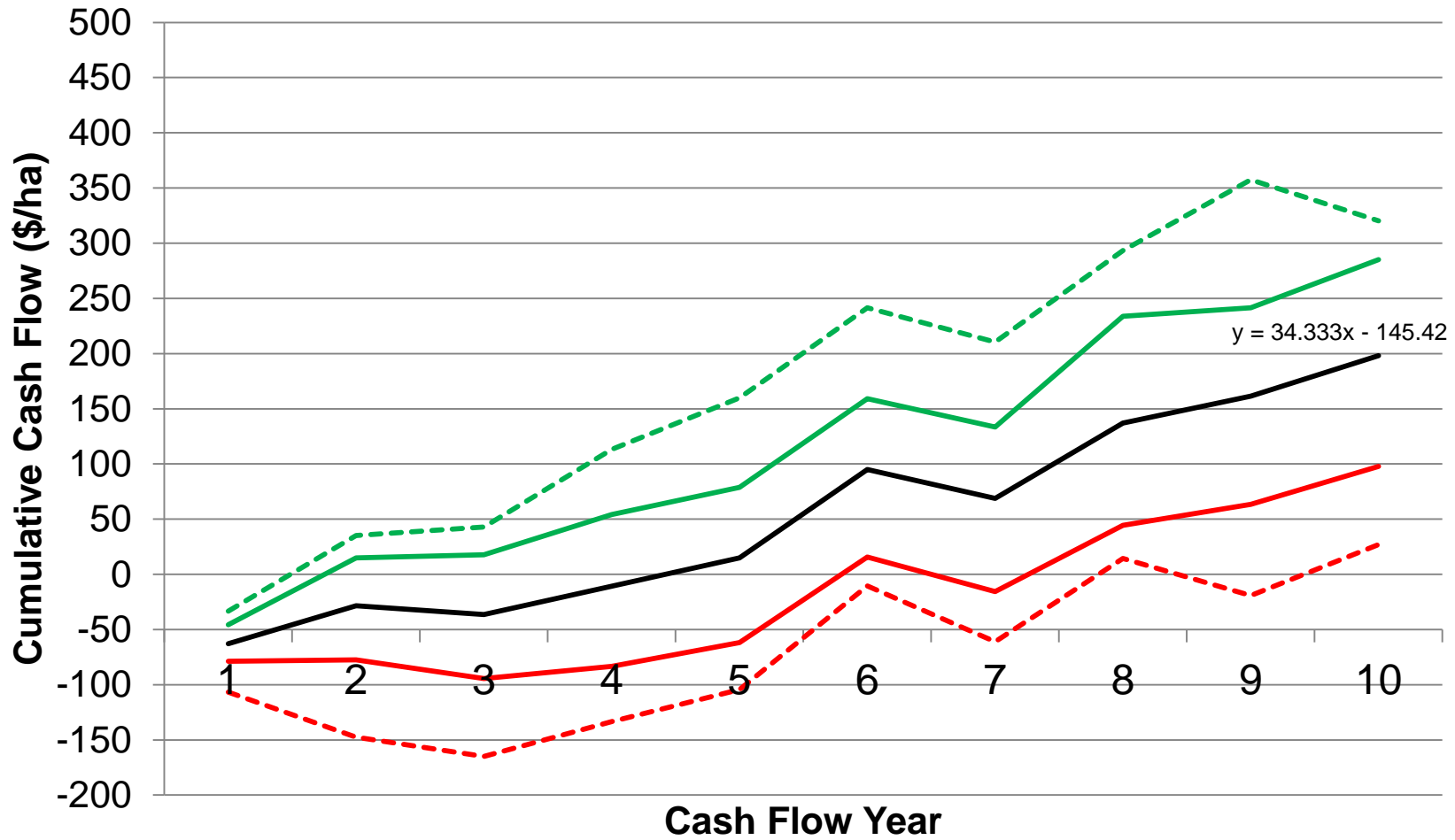
--- High — 90% — 50% — 10% --- Low



Could you make savings using Single Super and spreading extra sulfur?



Cumulative Cashflow Single Super + Sulphur Bentonite



--- High — 90% — 50% — 10% - - - Low



Value of fertiliser on improved pastures

- Phalaris pasture on the same soil
- Profit compared to unfertilised native
- Cost of establishment \$400/ha to the point of first grazing.



Value of fertiliser on improved pastures

- Value from improving pasture and then maintaining S & P fertility.
- Value from ensuring established pastures have maintained fertility.



GrassGro Parameters

- Phalaris based pasture run at the same fertility scalars.
- Stocking rates set to achieve 70:70 rule.

Fertiliser	Yr1 SR	Yr2 SR	Yr3 SR	Yr4 SR	Yr5 SR	Yr6 SR	Yr7 SR	Yr8 SR	Yr9 SR	Yr10 SR
Sulphur Bentonite	4.8	6	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
SuPer26S	4.8	6	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
Rundown	8.6	8.0	7.5	7.1	6.7	6	4.8	4.8	4.8	4.8



Fertiliser Rates

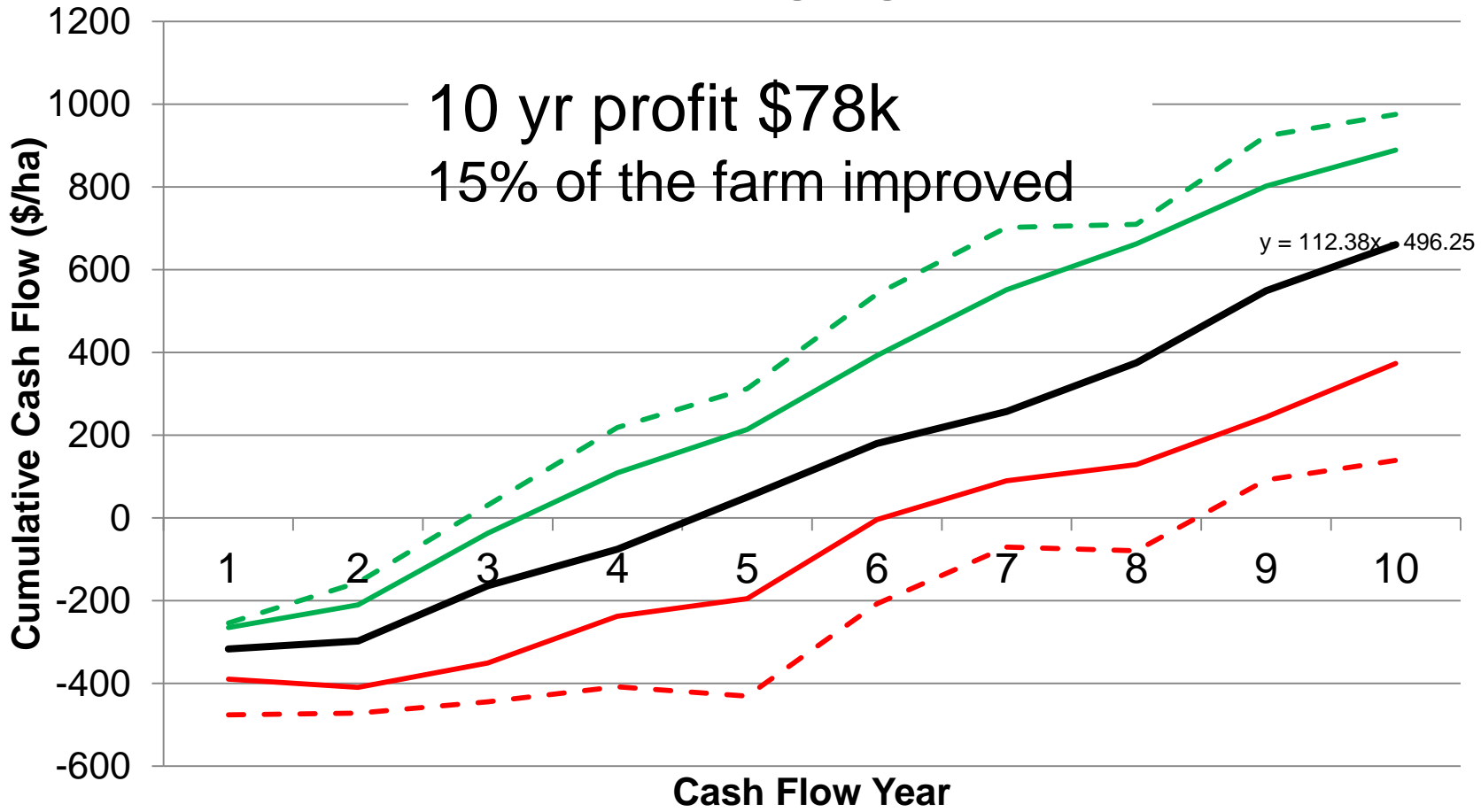
Fertiliser	Yr1	Yr2	Yr3	Yr4 etc
S Bentonite	66			66
SuPer26S	214	214	130	130
Run Down	Nil	Nil	Nil	Nil



Cumulative Profit

Pasture improvement with ongoing Sulphur Bentonite.

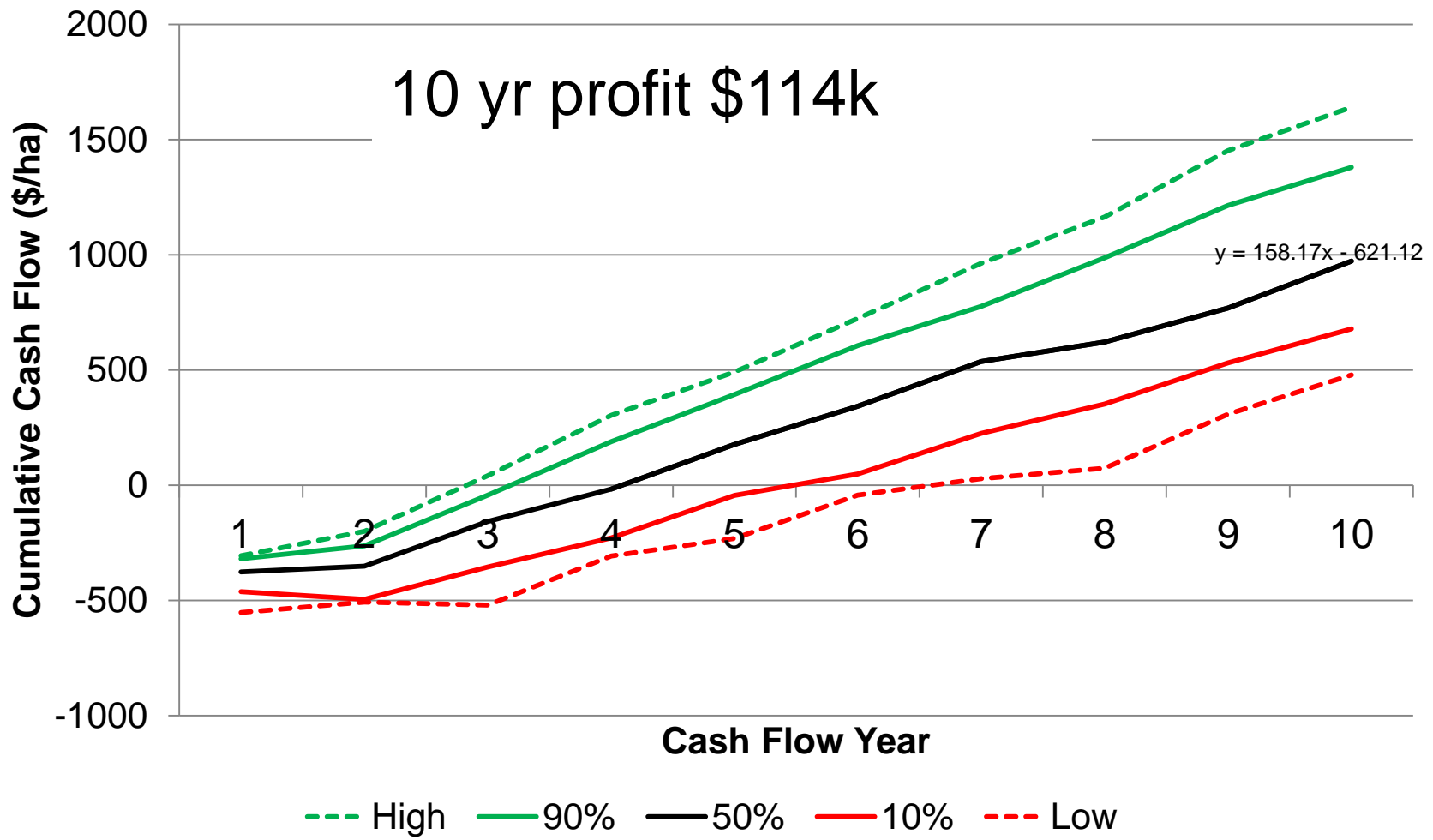
10 yr profit \$78k
15% of the farm improved



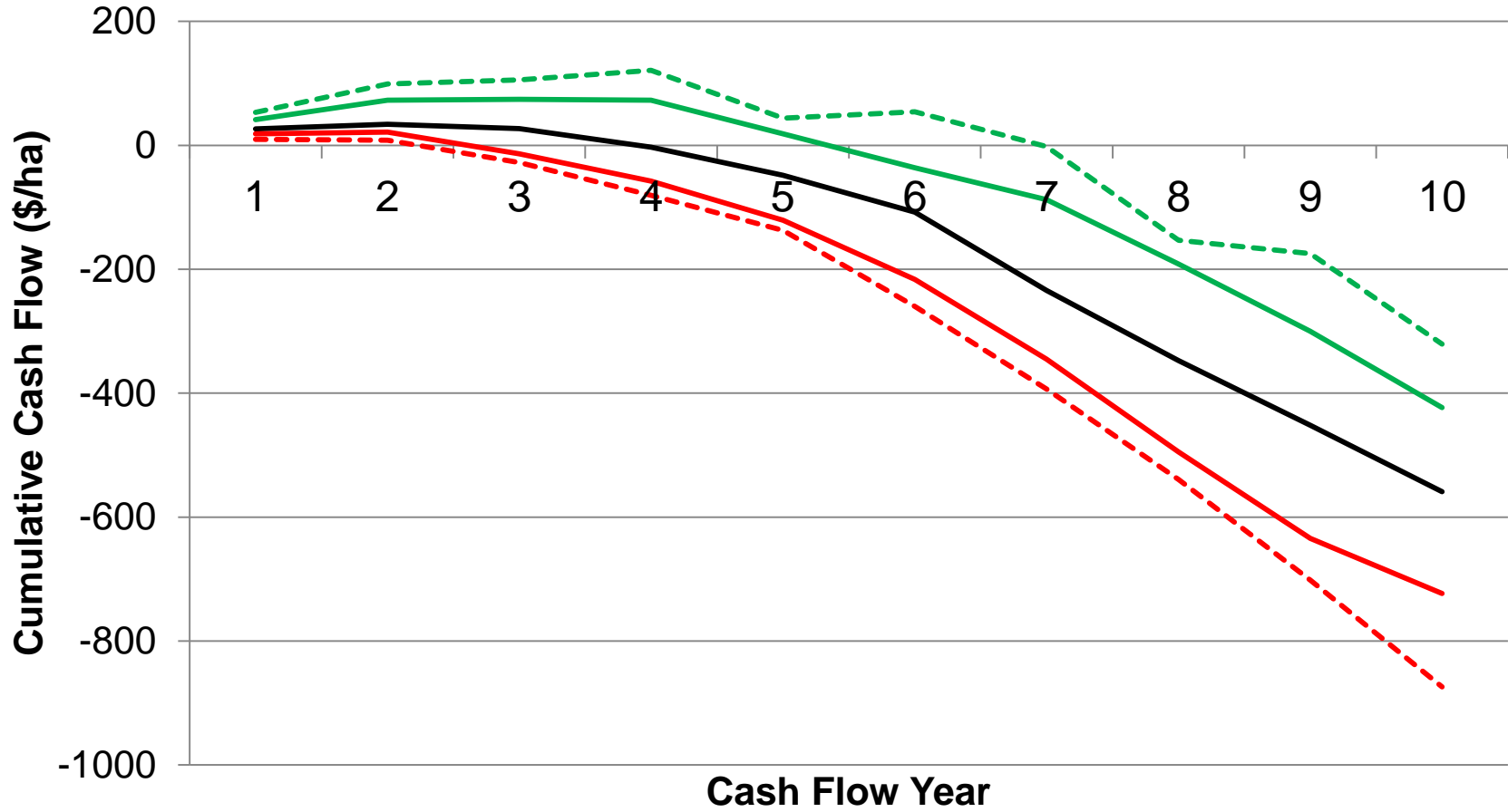
--- High — 90% — Median — 10% --- Low



Cumulative Profit Pasture improvement with ongoing SuPer26S



Cumulative Profit after ceasing fertiliser use on improved pasture



--- High — 90% — 50% — 10% --- Low



A note on animal genetics

- Critical to returns per DSE
- Higher returns per DSE make pasture improvements more profitable.
- Low performing animal may make some pasture strategies unprofitable.

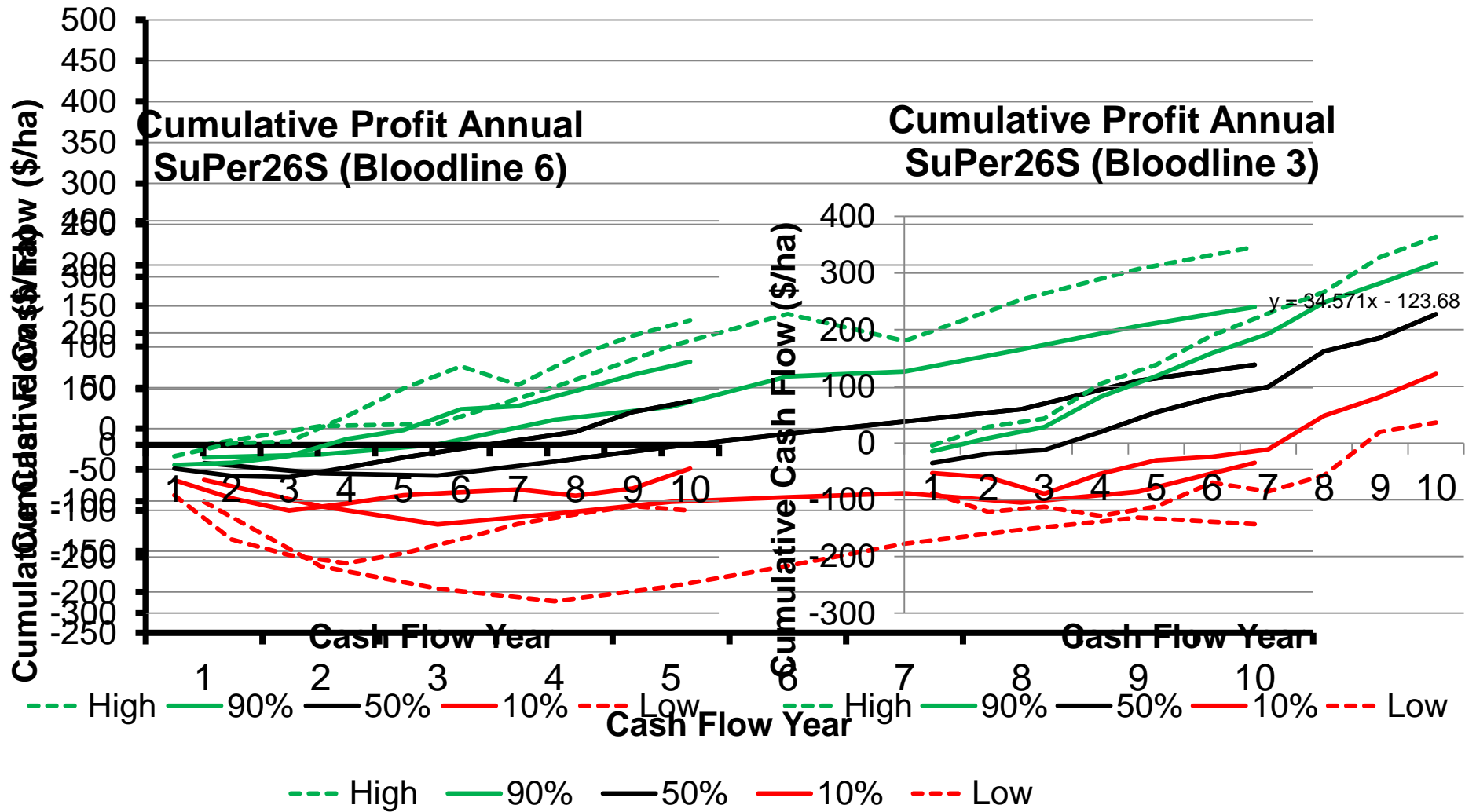


Grassgro Parameters

- Substitute Bloodline 3 with Bloodline 6 from W-trial analysis.
- Stocking rates rebalanced to the same DSE/ha.



Cumulative Profit Annual SuPer26S (Bloodline 6)

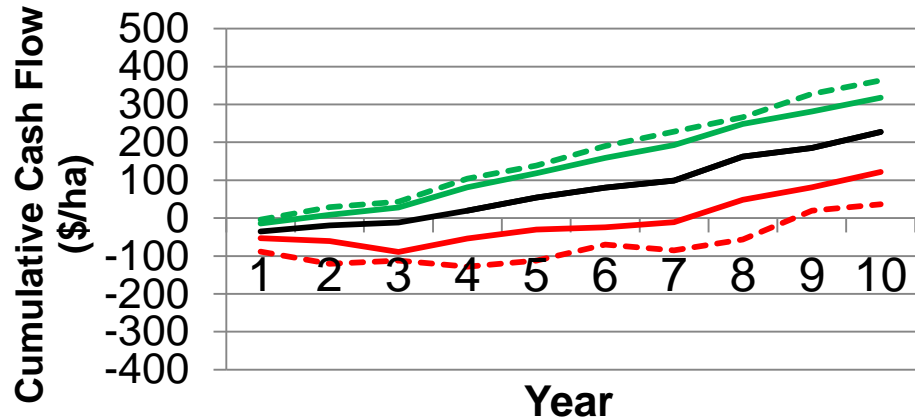


How sensitive are these strategies to fertiliser price?

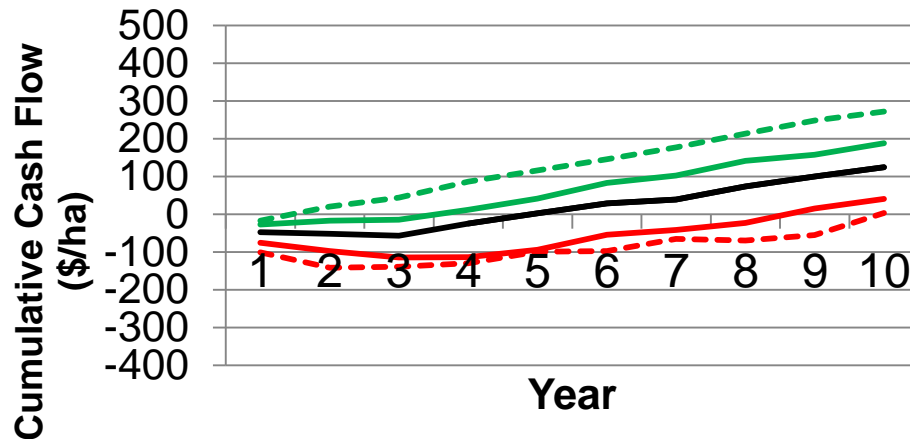
- Haven't tested sensitivity to S price
- Varied the cost of SuPer26S by +20% +40% and +60%



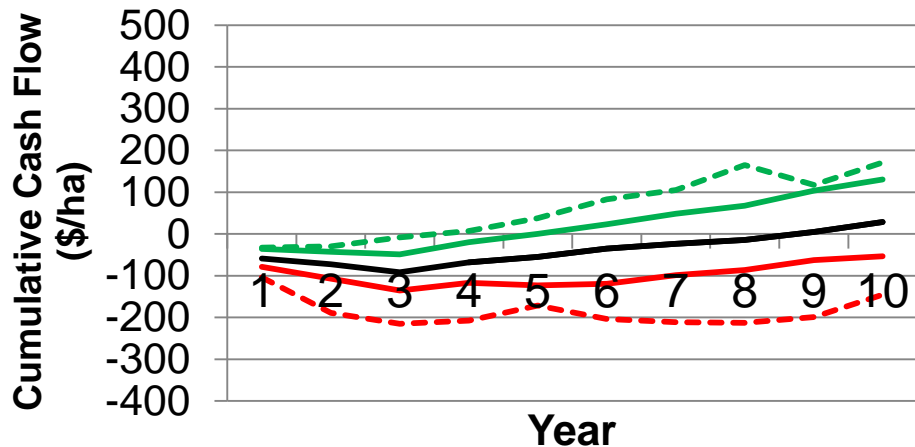
Base Price



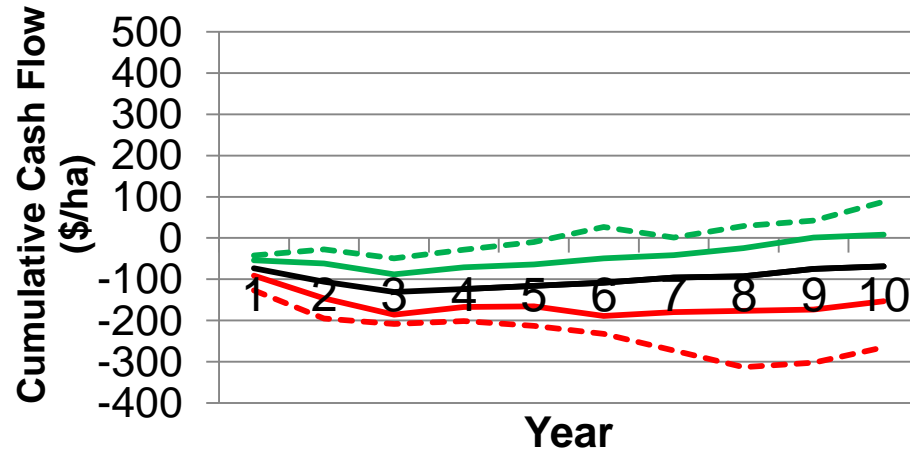
20% price hike



40% Price Hike



60% price hike



--- High — 90% — 50% — 10% - - - Low

--- High — 90% — 50% — 10% - - - Low



Conclusion

- Start using your soil test information.
- Choose the highest return options first
- Always raise stocking rate quickly
- If breeding up don't fertilise more than you can utilise.
- Don't use the possibility of a poor year next year as an excuse for inaction.
- Don't neglect your animal genetics.

