

Enterprise Diversity - livestock in mixed farming systems



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Grain & GrazeTM
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Mixed farming and risk

- ◉ Diversification is a valuable strategy to manage risk.
- ◉ Livestock is generally less volatile and has a lower cost base.
- ◉ But how much does changing enterprise mix change the risk profile of a business?

Defining risk

- ◉ Derived from the Italian word *risicare* which means 'to dare'
 - ◉ Implies opportunity
 - ◉ Implies choice (decisions)
- ◉ Risk = likelihood x consequence

Important concepts around risk

- ⦿ No reward without risk, risk is a necessary part of making returns
- ⦿ Risk has odds (knowable to uncertain)
- ⦿ Everyone has a different position on risk, no position is right or wrong, it is what you are prepared to live with.

Appreciating risk

- ⦿ Averages do not convey risk (prices, yields and some costs are risky variables).
- ⦿ Risk is not about the middle or the expected, it is the opposite - it's what happens at the extremes that's important (managing for the inevitable poor result but equally the good result).

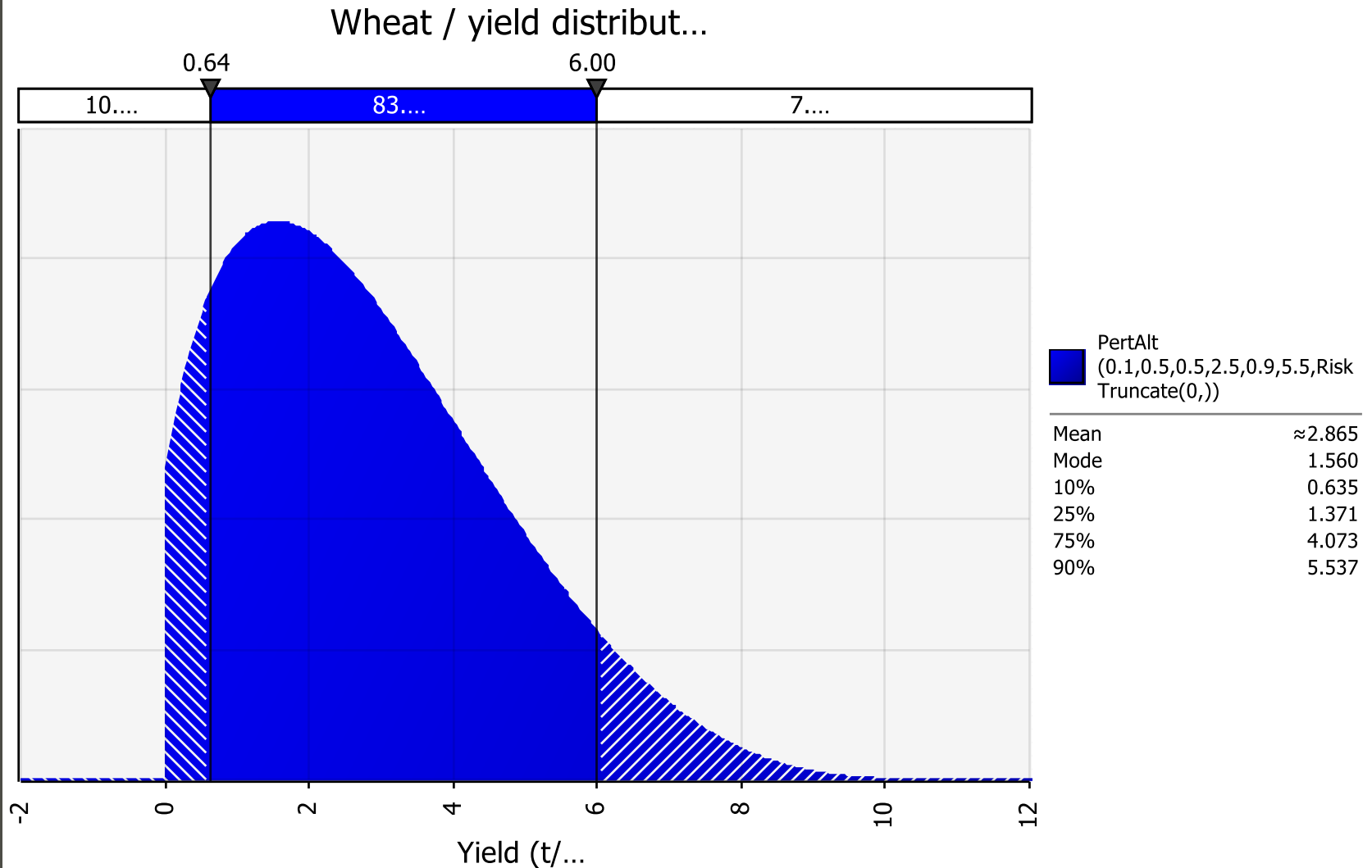
Framing the odds

How often it occurs

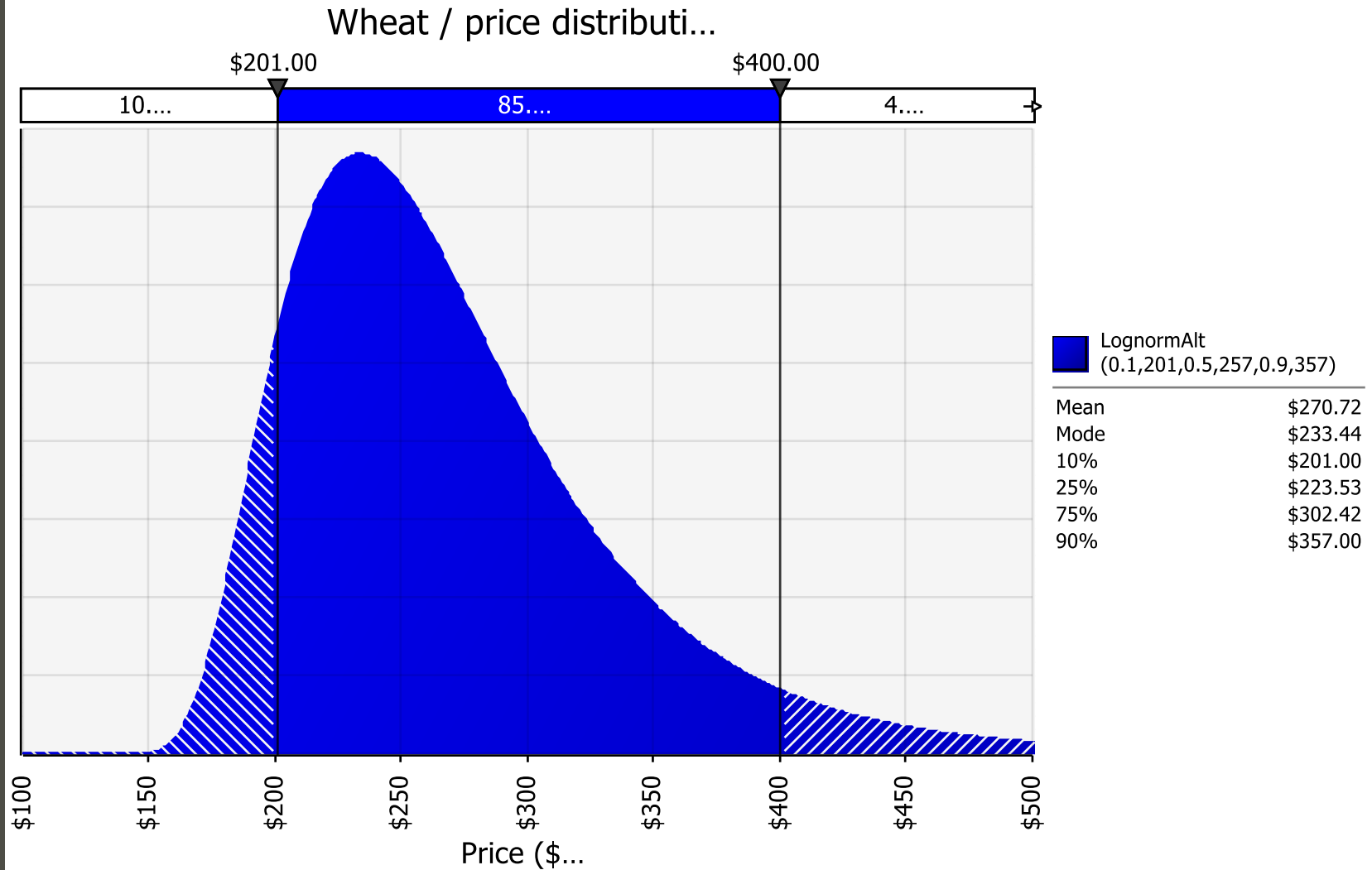


The value

Framing the odds



Framing the odds

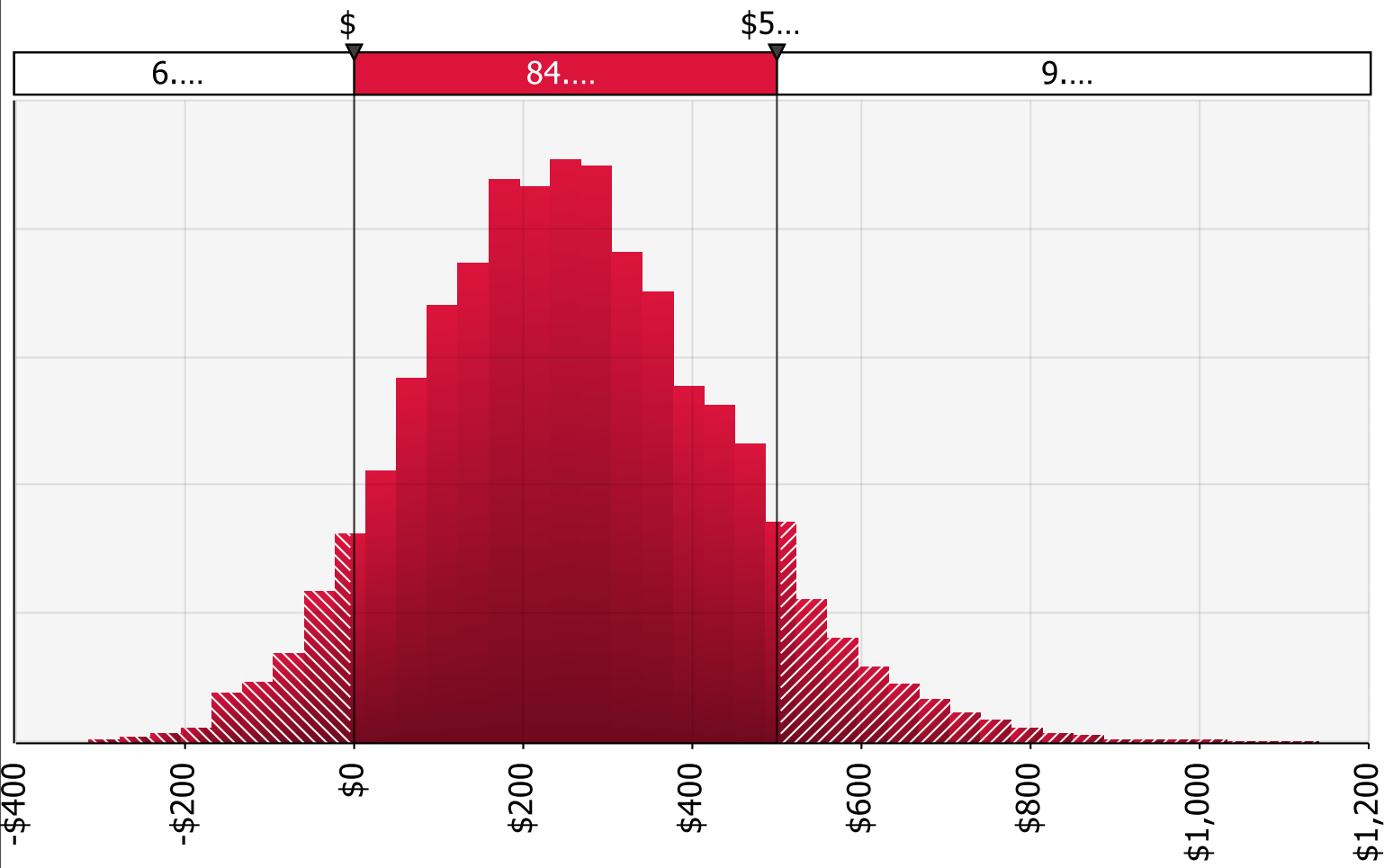


Example – mixed farm SW

Vic

- 1070 ha (crops, meat sheep)
- 430 ha crop (210 ha ‘marginal’)
- On average the cropping make the best average profit
- Constructed a simple whole farm model (glorified P & L, yield x price - costs)
- 32 risky variables for yields, prices, supp feeding cost

Farm operating profit (\$/ha) / Amo...

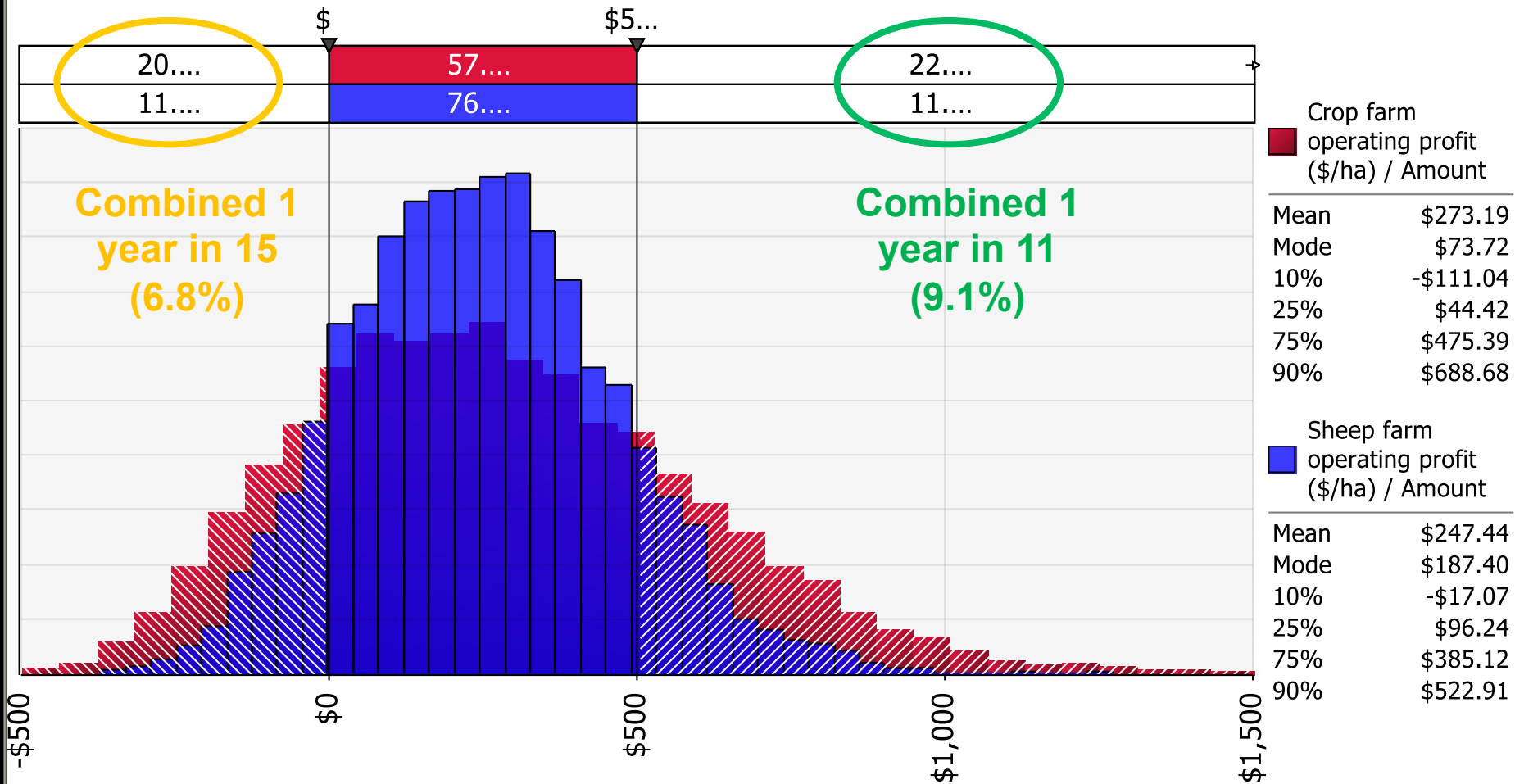


Farm operating profit (\$/ha) / Amount	
Mean	\$257.78
Mode	\$247.93
10%	\$33.39
25%	\$132.42
75%	\$374.11
90%	\$490.06

Informed discussion

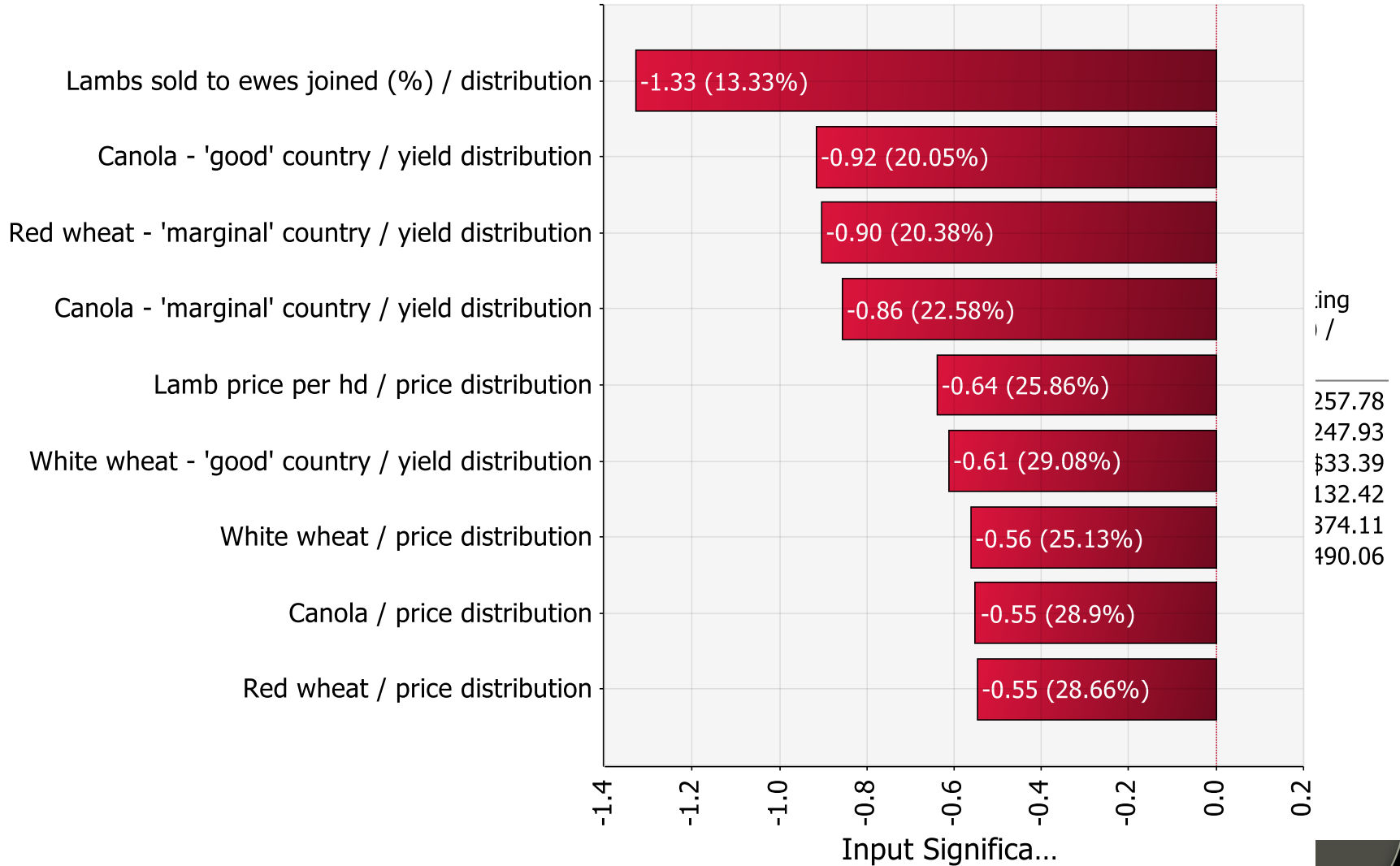
- ⦿ Ranges in profit and how often they occur
- ⦿ Will this meet your goals and can you sleep at night
- ⦿ Impact of each enterprise
- ⦿ Examination of most important risky variables
- ⦿ Contingency plans for good and bad
- ⦿ Puts previous results into perspective

farm operating profit (\$/ha) / Amo...



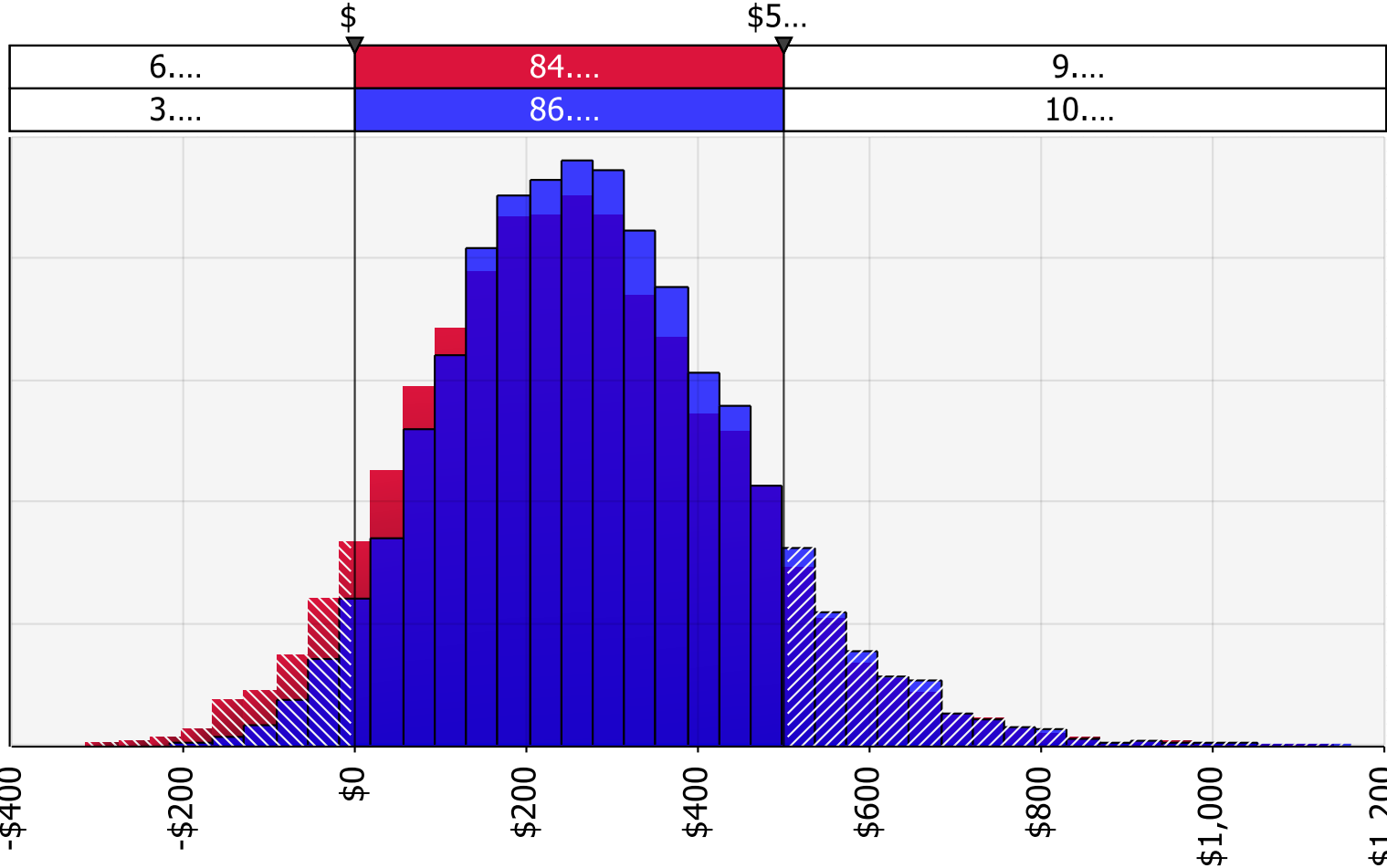
Farm operating profit (\$/ha) / Amo...

Key Inputs in Scenario Where Output Is <10%
(Input Percentile Shown)



-\$400

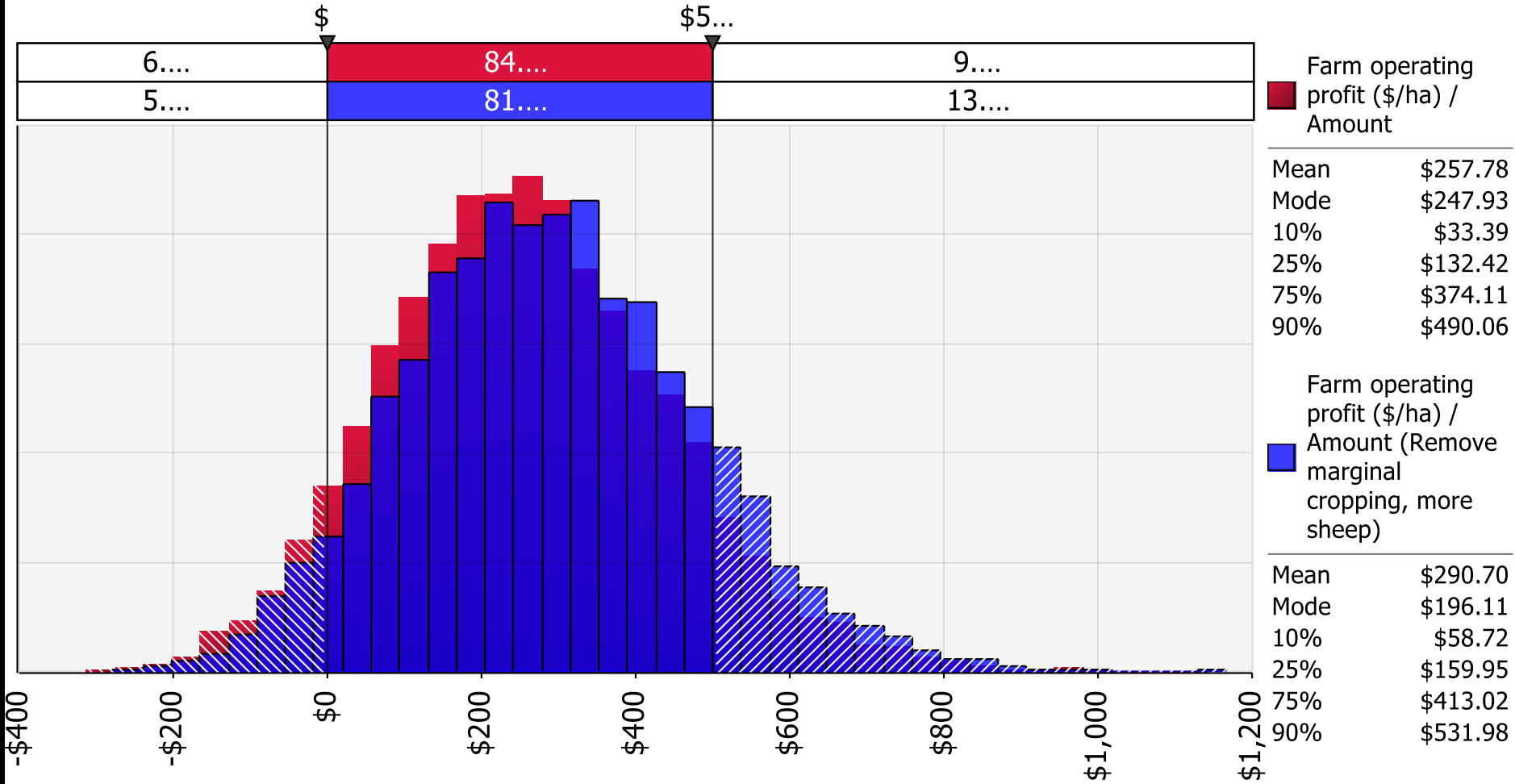
Farm operating profit (\$/ha) / Amo...



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Farm operating profit (\$/ha) / Amount (Increase lambs weaned per ewes joined)	
Mean	\$280.97
Mode	\$267.82
10%	\$77.05
25%	\$162.13
75%	\$386.80
90%	\$499.20

Farm operating profit (\$/ha) / Amo...



Informed discussion

- ⦿ Doesn't say how to make the transition or even if it is achievable
- ⦿ Other tools and analysis to inform this

Conclusion

- ◎ Diversity does help to manage risk.
- ◎ How much diversity to have depends on
 - how much risk you are prepared to live with
 - your goals and aspirations
 - your personal preferences.



Example – Beef & sheep farm SW Vic

- 320 ha – 290 ha effective (cattle (B3), wool & meat sheep). 21 DSE/ha.
- Constructed a simple whole farm model (Profit = yield x price - costs)
- 32 risky variables for yields, prices, supp feeding cost
- use @risk (Palisade Corp) to substitute average values for risky distributions.

Farm operating profit (\$/ha) / Amo...

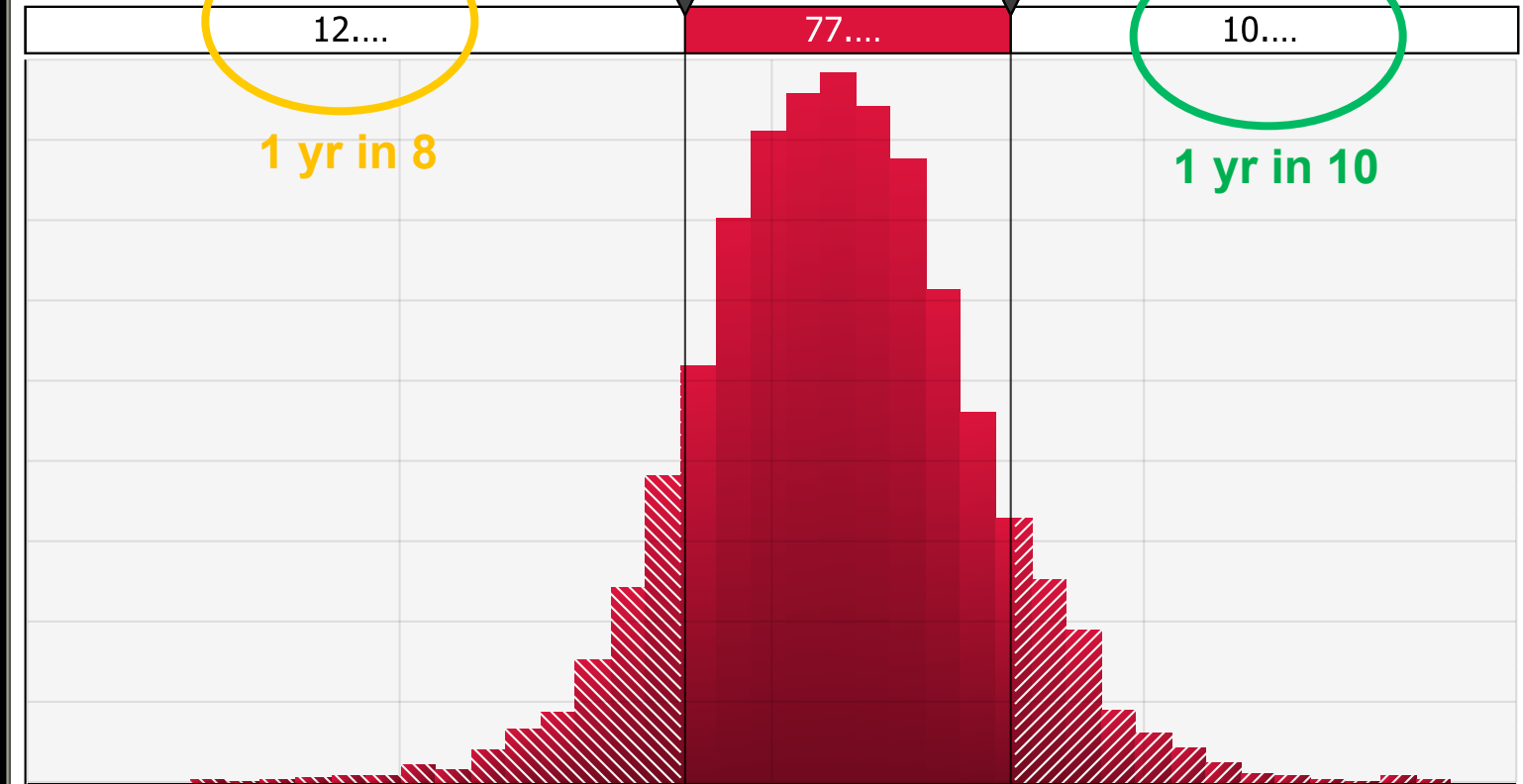
12...
1 yr in 8

\$1...

77...

\$3...

10...
1 yr in 10



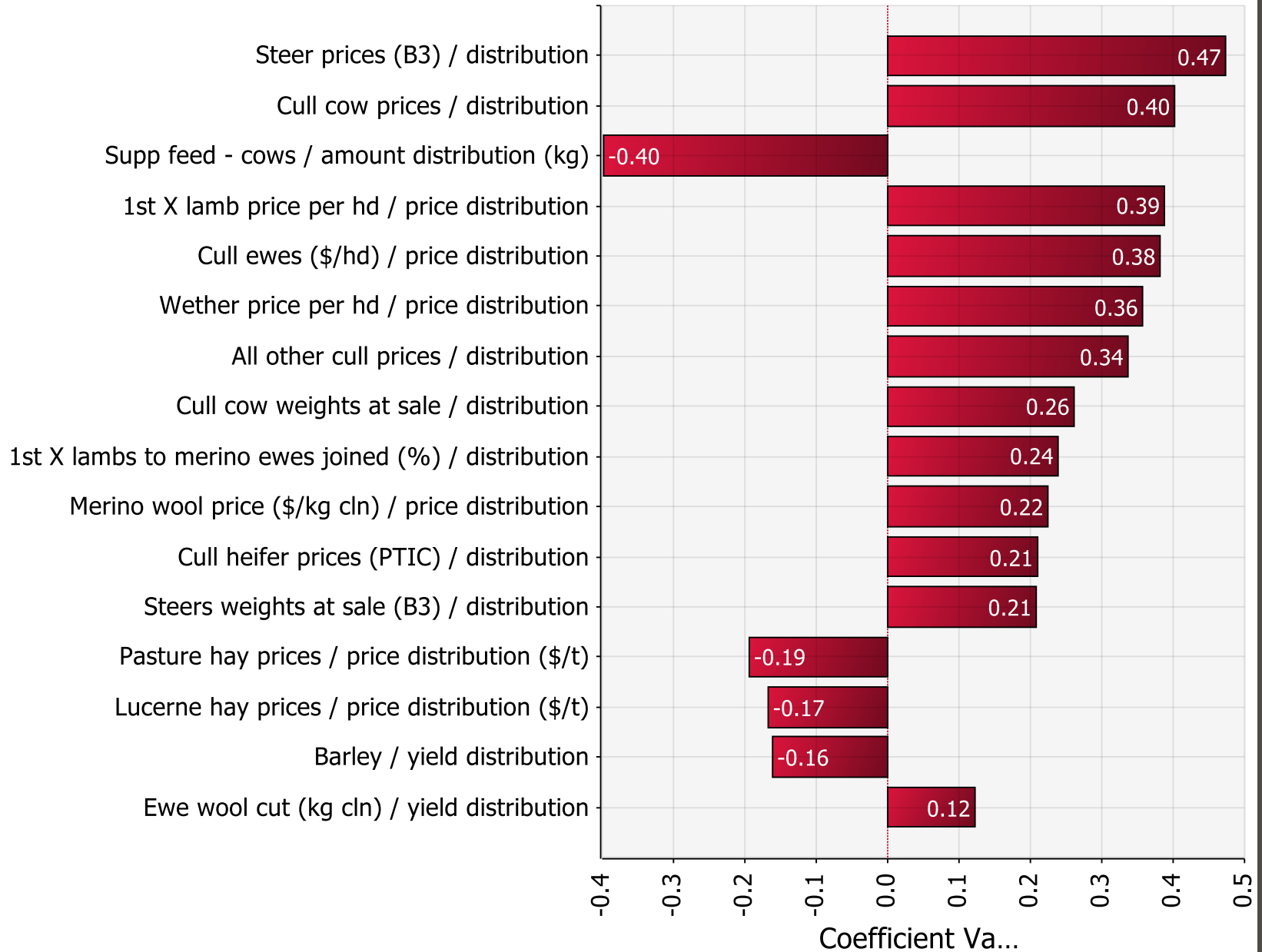
Farm operating profit (\$/ha) / Amount

Mean	\$242.90
Mode	\$232.21
10%	\$129.49
25%	\$181.16
75%	\$301.91
90%	\$361.07

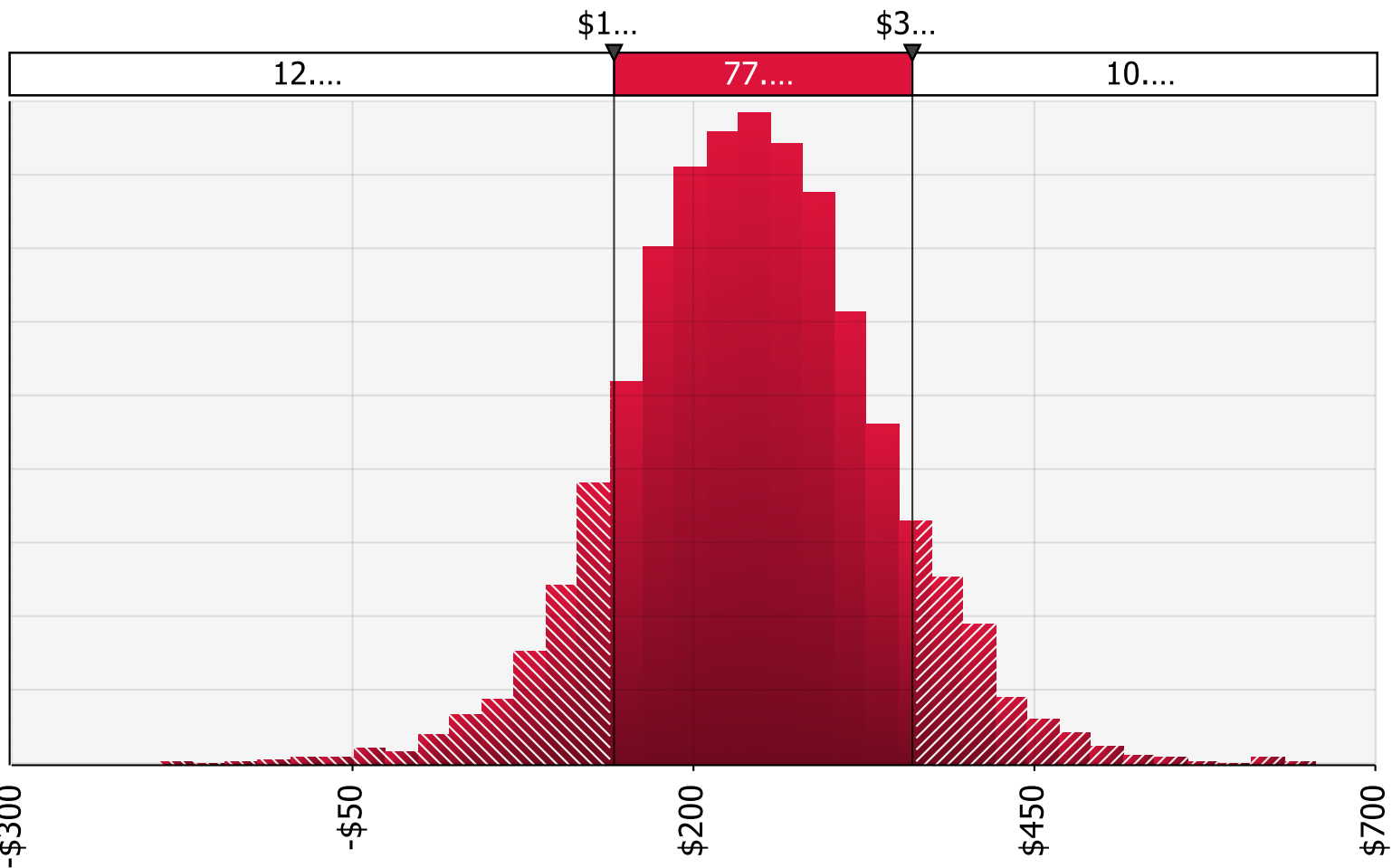
-\$300 -\$50 \$200 \$450 \$700

Farm operating profit (\$/ha) / Amount (Curre...

Correlation Coefficients (Spearman Ra...



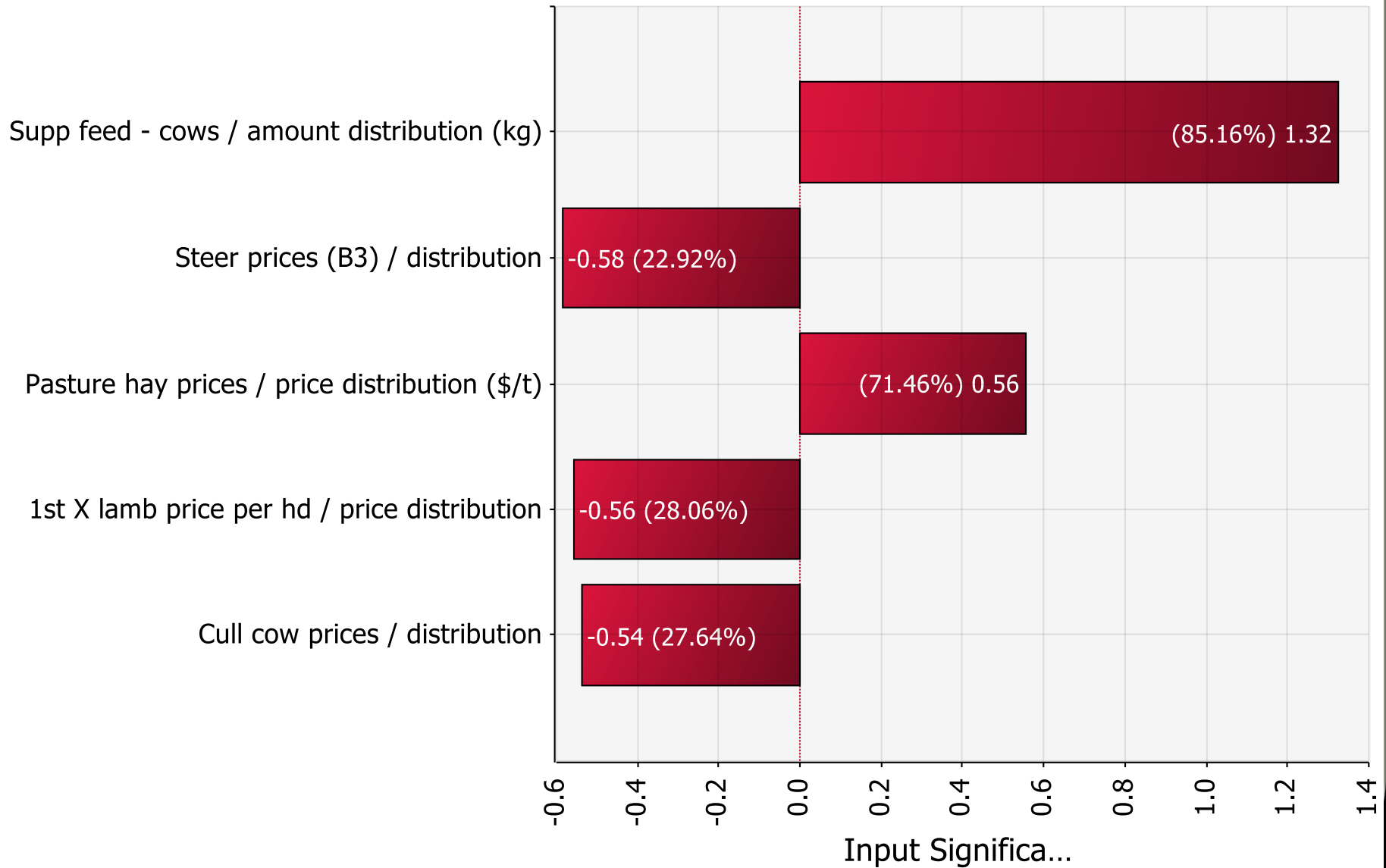
Farm operating profit (\$/ha) / Amo...



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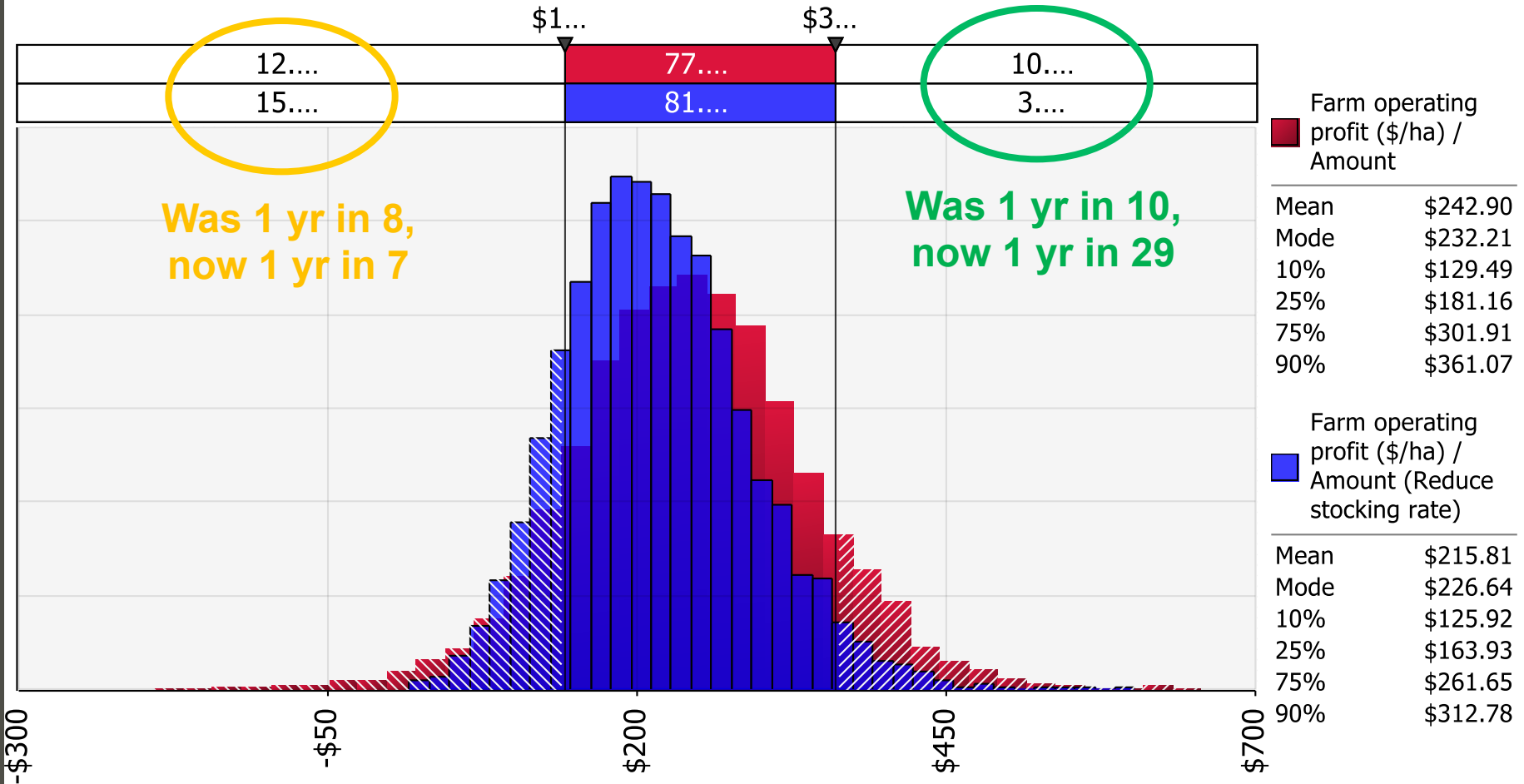
Farm operating profit (\$/ha) / Amount (Curre...

Key Inputs in Scenario Where Output Is <10%
(Input Percentile Shown)

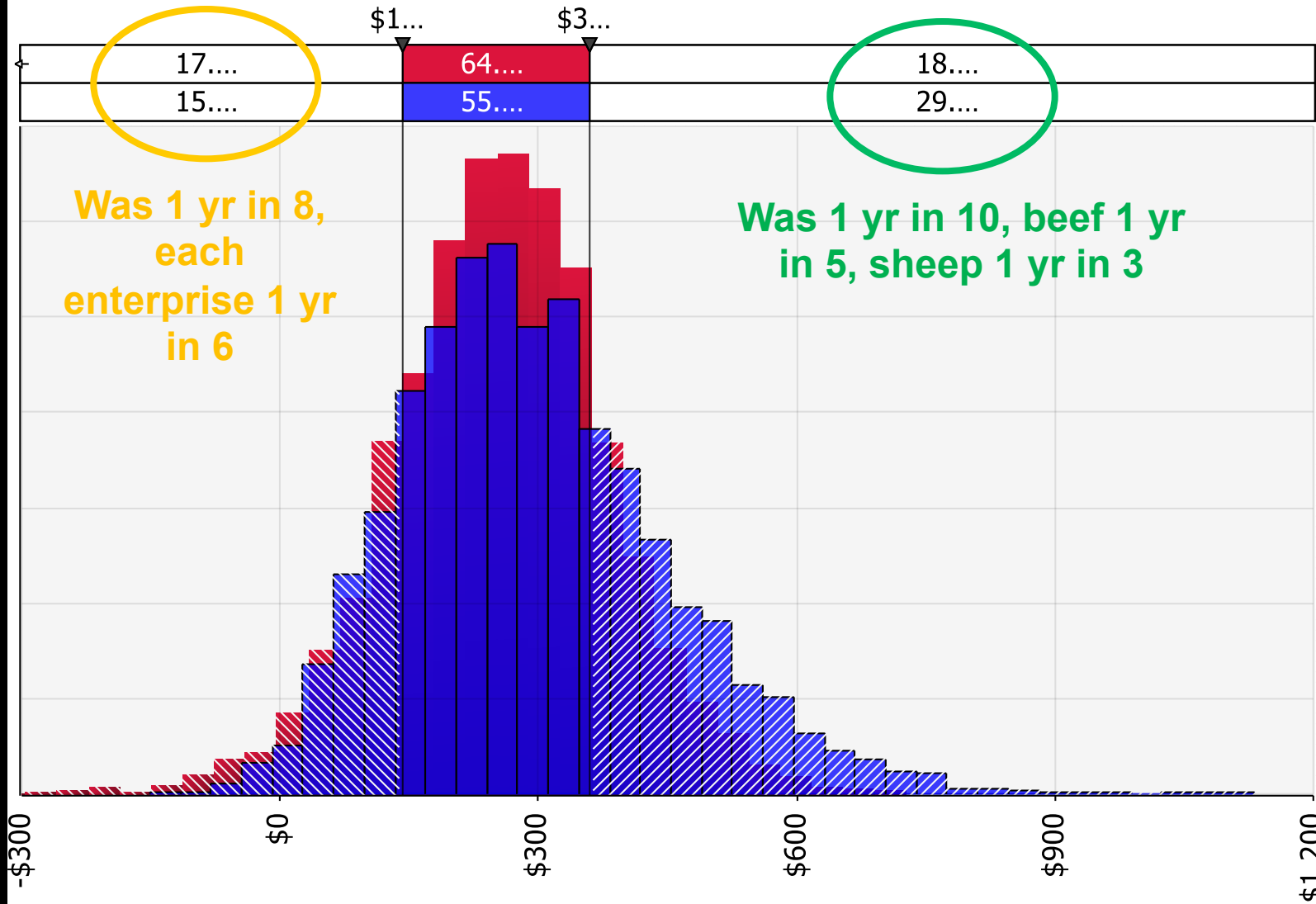


Reduce stocking rate from 180 cows (21.7 DSE/ha) to 150 cows (18.1 DSE/ha). Reduce supp feeding by 60%

Farm operating profit (\$/ha) / Amo...



Enterprise operating profit (\$/ha) / Amo...



Was 1 yr in 8,
each
enterprise 1 yr
in 6

Was 1 yr in 10, beef 1 yr
in 5, sheep 1 yr in 3

Beef farm	
operating profit (\$/ha) / Amount	
Mean	\$255.98
Mode	\$242.21
10%	\$102.68
25%	\$178.17
75%	\$336.45
90%	\$408.46
Sheep farm	
operating profit (\$/ha) / Amount (Current)	
Mean	\$293.00
Mode	\$245.86
10%	\$109.05
25%	\$185.06
75%	\$383.75
90%	\$498.17

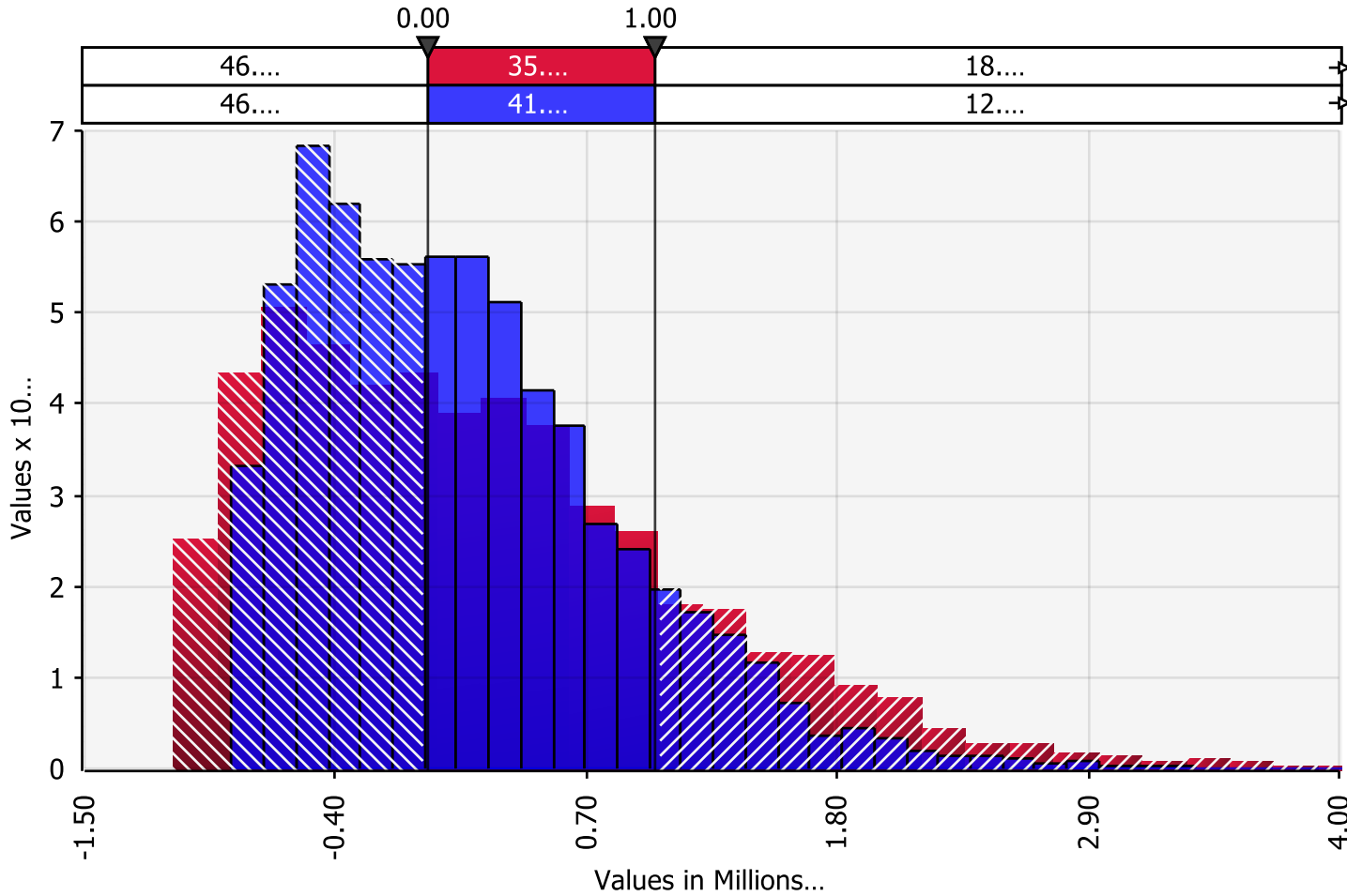
Risk analysis

- 1,500 ha farm West Wimmera
- 1,000 ha heavy soil, 500 ha light soil
- 40% wheat, 25% barley, 10% canola, 5% lentils, 5% bean, 15 % vetch hay.
- 1 manager, 0.5 labour
- Cost reduced by 20% if yield decile 3 or less
- Cost increased by 20% if yield decile 7 or more
- \$0.5M debt, 6.5% interest
- \$1.2M in plant and equipment (dep @10%)

Risk analysis

- Scenarios
 - Buy 500 ha @ \$2,750/ha
 - Lease 500 ha @ \$124/ha (4.5%)
 - Share farm 500 ha @ 70:30 split
- Don't need extra equipment
- Extra 0.5 labour unit

Farm operating profit PBT (\$) / Amo...



Farm operating profit PBT (\$) / Amount (Baseline + Buy 500 ha)

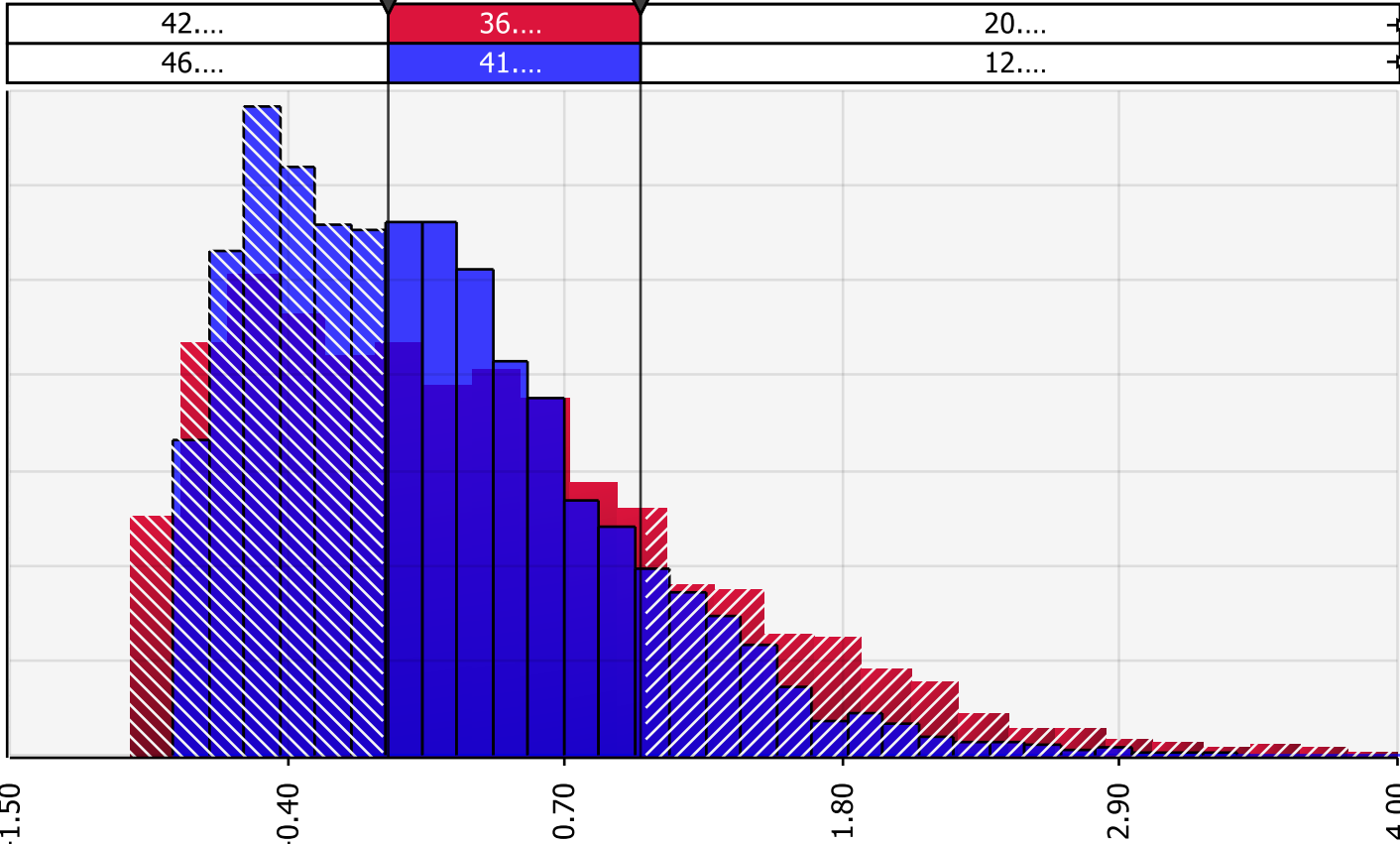
Mean	\$233,932.41
Mode	-\$658,043.59
10%	-\$793,762.57
25%	-\$492,610.53
75%	\$760,463.70
90%	\$1,512,227.46

Farm operating profit PBT (\$) / Amount (Baseline (1500 ha))

Mean	\$160,121.57
Mode	\$79,810.02
10%	-\$609,096.97
25%	-\$378,519.29
75%	\$553,622.57
90%	\$1,107,902.53

Farm operating profit PBT (\$) / Amount (Baseline + lease 500...

0.00 1.00



Farm operating profit PBT (\$) / Amount (Baseline + lease 500 ha)

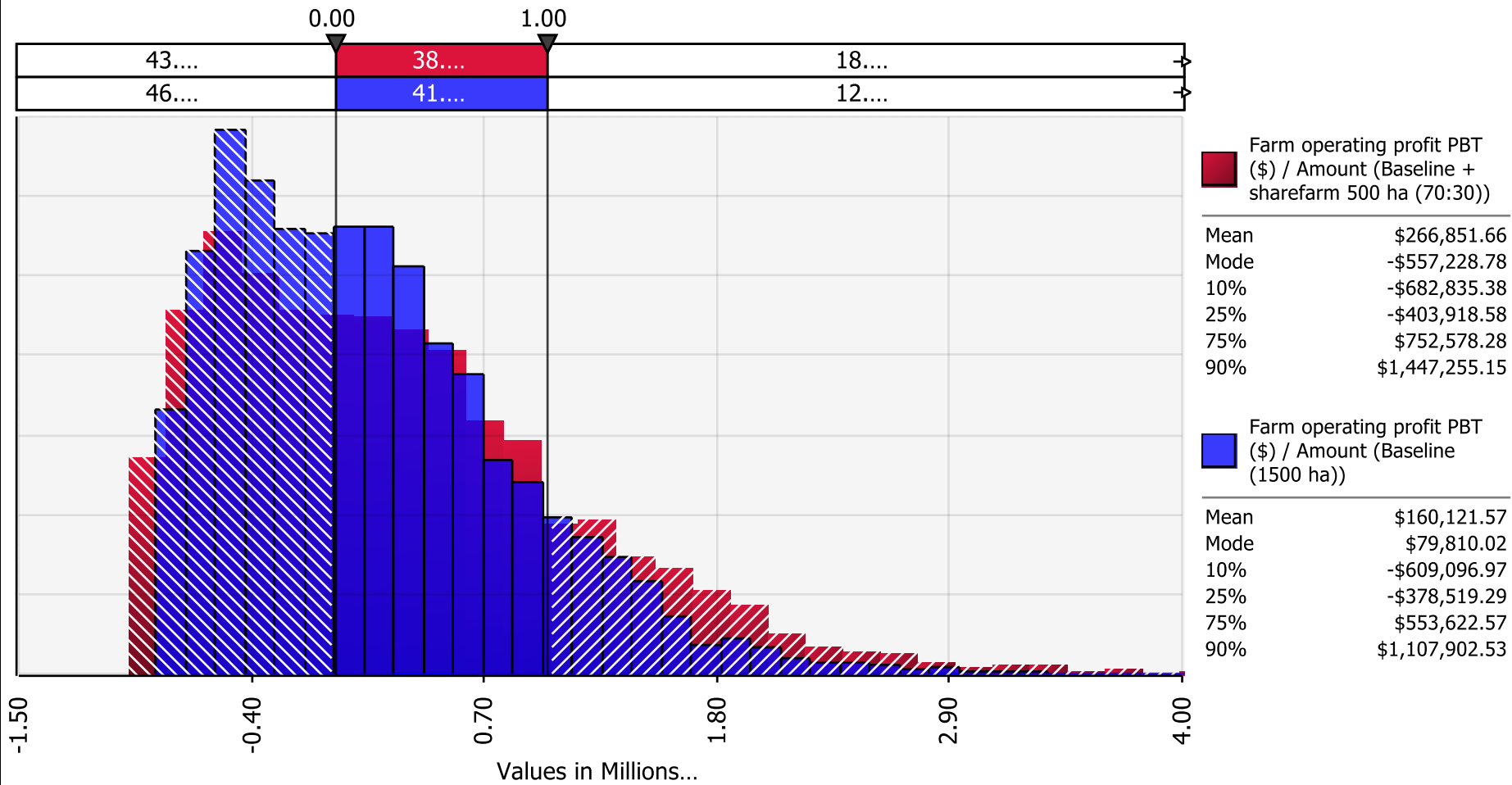
Mean	\$323,307.41
Mode	-\$568,668.59
10%	-\$704,387.57
25%	-\$403,235.53
75%	\$849,838.70
90%	\$1,601,602.46

Farm operating profit PBT (\$) / Amount (Baseline (1500 ha))

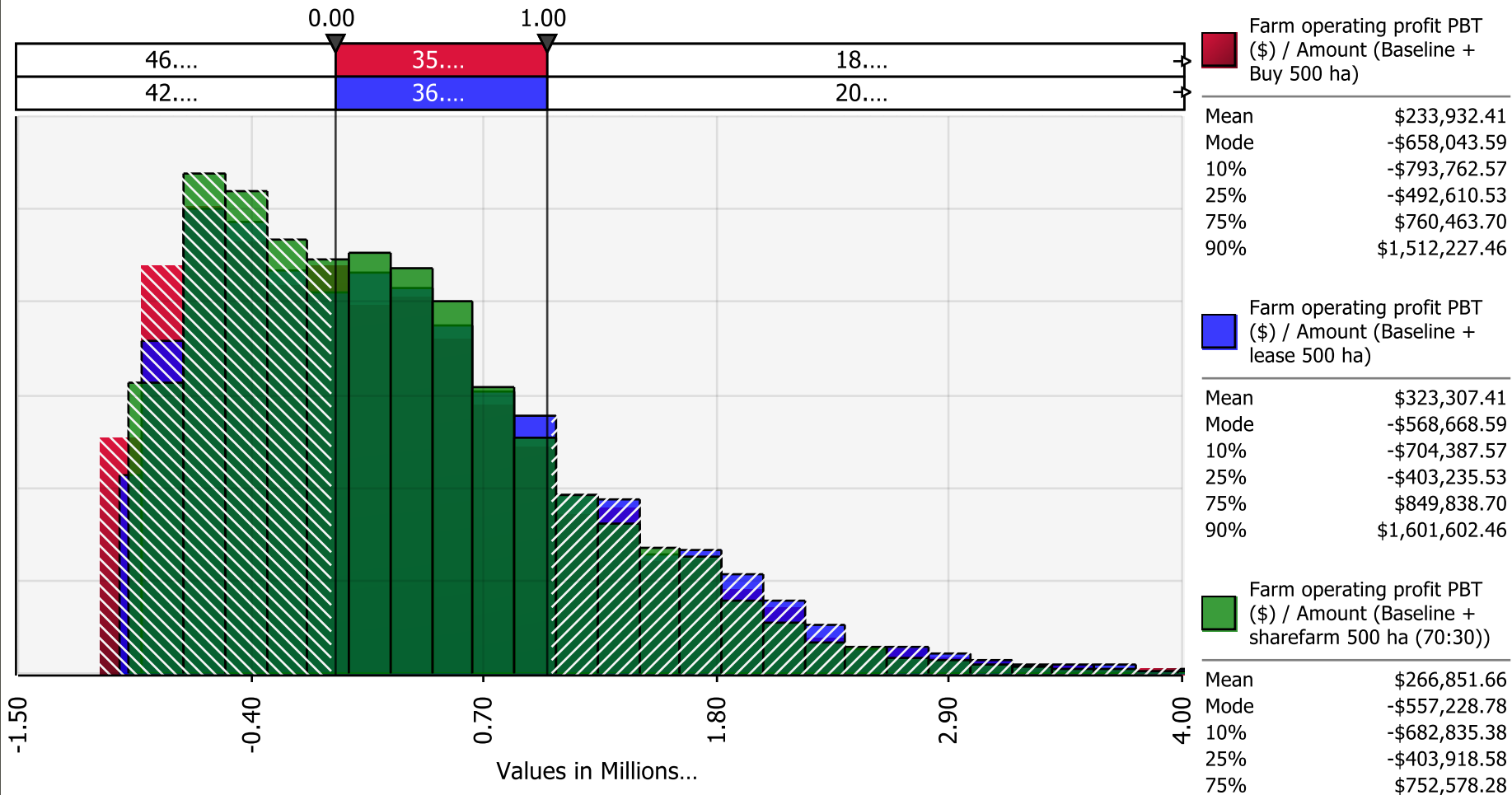
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Values in Millions...

Farm operating profit PBT (\$) / Amount (Baseline + sharefarm 500 ha (70:3...



Farm operating profit PBT (\$) / Amo...



46...
42...

35...
36...

18...
20...

-1.50

-0.40

0.70

1.80

2.90

4.00

Values in Millions...

0.00

1.00

	Profit before tax (\$'000)		
	Worst 1 yr in 10	Mean	Best 1 yr in 10
Scenario			
Baseline	-609	160	1108
Buy 500 ha	-794	234	1512
	-185	74	404
Lease 500 ha	-704	323	1602
	-95	163	494
Share (70:30) 500 ha	-683	267	1447
	-74	107	339

Wheat prices

- 15 year average APW pool price is \$320/t (inflated to 2012).
- What are the chances the price will be between \$315/t and 325/t? (4.4%)
- What are the chances of the price being – 20% of the average or less (\$256/t)? (1 yr in 4)
- What are the chances of the price being +20% of the average or better (\$384/t)? (1 yr in 6)

Wheat prices

APW pool price / Distributi...

