Machinery Cost Estimate for Cranberry Boom Sprayer

- Make assumptions for "Typical" Grower
- 90' boom sprayer pulled by 100 HP tractor
- Machinery Cost Categories
  - Fixed: depreciation, capital (interest) cost (pay whether use sprayer or not)
  - Variable: labor, repairs/maintenance, fuel/lube (pay per hour or acre of use)
- Fixed costs spread over average acres machinery used on each year

Depreciation

- Straight line depreciation over 15 yrs

  (Price new – Price after 15 yrs) / 15
- Sprayer: (55,000 - 40,000)/15 = $1000/yr
- Tractor: (60,000 - 10,000)/15 = $3333/yr
- Spread over annual use
- Sprayer: 14 trips/yr for 30, 60, or 90 ac, so

  $1000/(30 x 14) = $2.38/ac

  $1000/(60 x 14) = $1.19/ac

  $1000/(90 x 14) = $0.79/ac
- Tractor: 500 hr/yr: $3333/500 = $6.67/hr, at a spray rate of 7.5 ac/hr: $6.67/7.5 = $0.89/ac

Interest Cost

- Average Machinery Value at 6% rate
- Sprayer: ½(55,000-40,000) x 6% = $2850/yr
- Tractor: ½(60,000-10,000) x 6% = $2100/yr
- Spread over annual use as before
- Sprayer: 14 trips/yr for 30, 60, or 90 ac, so

  $2850/(30 x 14) = $6.79/ac

  $2850/(60 x 14) = $3.39/ac

  $2850/(90 x 14) = $2.26/ac
- Tractor: 500 hr/yr: $2100/500 = $4.20/hr, at a spray rate of 7.5 ac/hr: $4.20/7.5 = $0.56/ac

Labor

- Part Time Hired Labor at $10.00/hr, 7.7% benefits rate, and 7.5 ac/hr = $1.44/ac
- Owner/Operator Management Time: $15.00/hr, 7.7% benefits rate, 7.5 ac/hr, with 10% overhead on time (extra time to manage part time help) = $2.61/ac

Repairs/Maintenance

- Purchase price x repair factor (%) per hour of use from Ag Engineering
- Sprayer: varies with acres since hours used increases (assume 14 trips/yr):
  - 30 ac: $0.13/ac
  - 60 ac: $0.06/ac
  - 90 ac: $0.04/ac
- Tractor 500 hr/yr, $3.08/hr for $0.45/ac

Fuel/Lube

- Diesel: $1.80/gal
- 100 HP tractor uses 4.38 gal/hr
- Lubrication: 15% of fuel cost
- Assume 10% overhead (time to fuel/lube), plus 7.5 ac/hr spray rate
- Final: $1.33/ac for tractor fuel/lube

Put it all together

30 acres

Category	Sprayer	Tractor	Total
Depreciation	2.38	0.89	3.27
Interest	6.79	0.56	7.35
Labor	1.44	2.61	4.04
Fuel/Lube	0.00	1.33	1.33
Repairs/Maint	0.13	0.45	0.58
Total	10.73	5.84	16.57

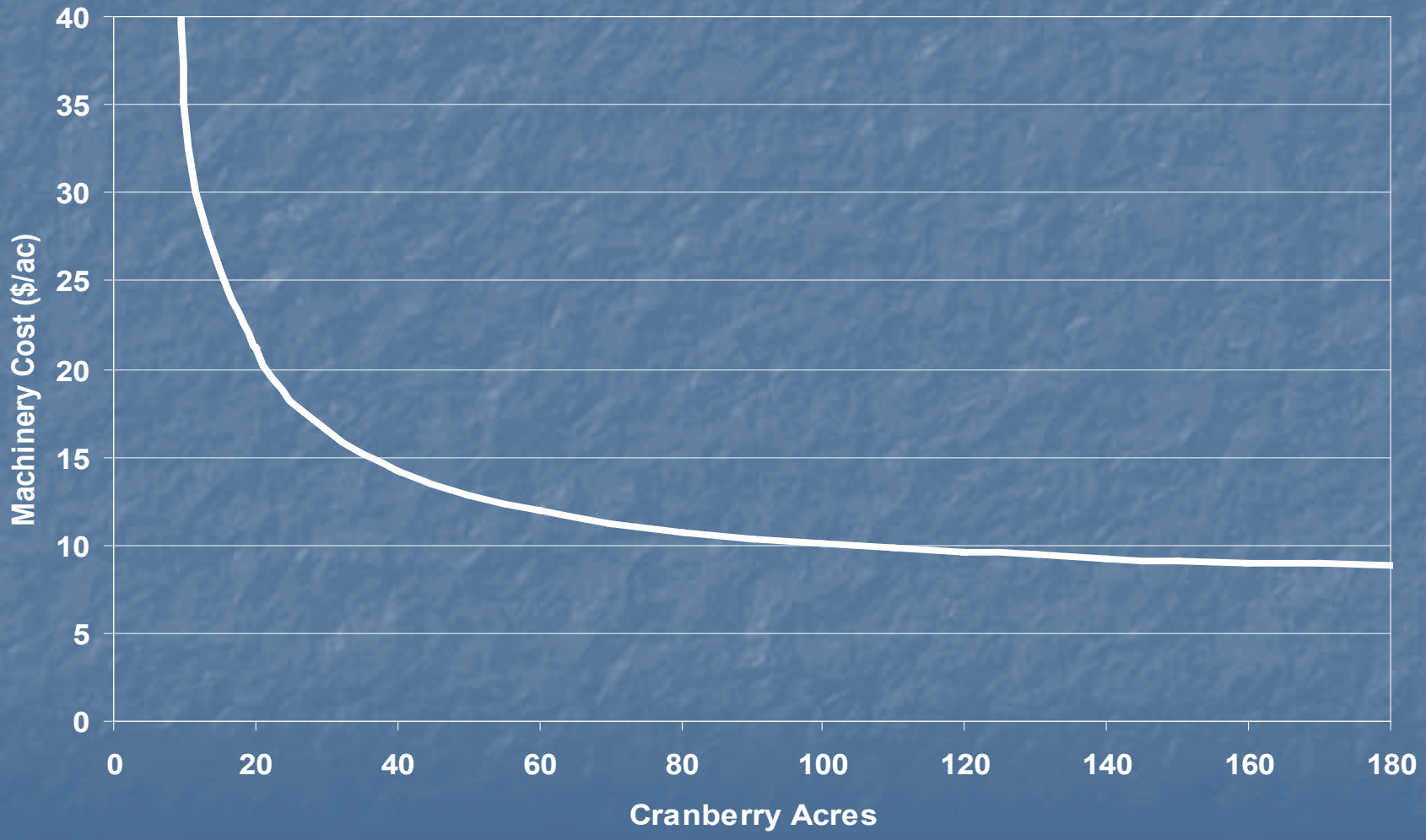
60 acres

Category	Sprayer	Tractor	Total
Depreciation	1.19	0.89	2.08
Interest	3.39	0.56	3.95
Labor	1.44	2.61	4.04
Fuel/Lube	0.00	1.33	1.33
Repairs/Maint	0.06	0.45	0.52
Total	6.08	5.84	11.92

90 acres

Category	Sprayer	Tractor	Total
Depreciation	0.79	0.89	1.68
Interest	2.26	0.56	2.82
Labor	1.44	2.61	4.04
Fuel/Lube	0.00	1.33	1.33
Repairs/Maint	0.04	0.45	0.49
Total	4.53	5.84	10.37

Graphical Version



Summary

- Machinery cost for applying fertilizer ranges $10-$20/ac, with larger costs for smaller farms since spread depreciation and interest costs over fewer acres
- Analysis based on several assumptions, if want results for different assumptions, contact
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