



Economics of Using AV-1011 Bird Repellent for Rice Seed

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Damage from blackbirds to rice fields in southern to central Louisiana (referencing the Interstate 10 corridor) has become problematic and can cause substantial economic losses to a newly planted rice field. The use of AV-1011 seed treatment can be applied to a bag of rice seed as a detrimental device to combat blackbird feeding habits in rice fields. Depending on the severity, blackbirds that feed on rice seed reduce the survivability of the rice stand and cause serious economic losses, if the field is not replanted. However, replanting a failed rice crop will represent an additional (or duplicative) costs outlay made by the grower. Therefore there are two options available to growers: provide an initial seed treatment with the AV-1011 repellent or replant a rice field; each with a different cost outlay made at different points in the season. This report provides an economic comparison of the two management options to a grower faced with blackbird predator pressure.

Planting costs for conventional, Clearfield, and hybrid rice seed were obtained from *the 2017 Projected Costs and Returns for Rice in Louisiana*, a series of enterprise budgets released by the LSU AgCenter in January, 2017. Planting cost will vary depending on the seed method employed and the seeding rate used. Two planting methods included in the representative farm work are water-seeded and drill-seeded rice. For water-seeded rice, planting costs include a custom aerial application, seed material, and a GPS technology charge. The total water-planted rice costs are \$7.07 per acre. Likewise, for drill-planted rice, planting costs are a function of the grain drill, tractor, and seed material. The total drill-planted rice costs are \$10.16 per acre. Tables 1 and 2 presents the direct planting costs (per acre) for water and drill-planted conventional, Clearfield, and hybrid rice seed across varying seeding rates. Rice seed prices, obtained in December of 2016, is estimated at \$0.38 per pound for conventional, \$1.05 per pound for Clearfield, and \$160.00 per acre for hybrid seed. Rice seed is often treated with an insecticide, Dermacor X-100 is a common application. Assuming a recommended rate of 2 fluid ounces per acre, the total treatment costs is approximately \$24.00 per acre for water-planted and \$19.00 per acre for drill-planted rice. Zinc was also applied to the seed at a cost of \$2.00 per hundredweight of seed. A fungicide seed treatment is also included in the seed cost estimate at a cost of \$3.50 per hundredweight of seed. Cost are presented on a per-acre basis.

Table 1. Water-planted rice seeding costs per acre, 2017.

Seed Technology	Seeding Rate	Seed Cost	Total Cost
Conventional	60	\$48.00	\$57.17
	75	\$54.00	\$63.70
	90	\$60.00	\$70.22
	100	\$64.00	\$74.57
	120	\$72.00	\$83.27
Clearfield	60	\$88.20	\$97.37
	75	\$104.25	\$113.95
	90	\$120.30	\$130.52
	100	\$131.00	\$141.57
	120	\$152.40	\$163.67
Hybrid	20	\$185.20	\$192.97

Table 2. Drill-planted rice seeding costs per acre, 2017.

Seed Technology	Seeding Rate	Seed Cost	Total Cost
Conventional	60	\$43.00	\$55.26
	75	\$49.00	\$61.79
	90	\$55.00	\$68.31
	100	\$59.00	\$72.66
	120	\$67.00	\$81.36
Clearfield	60	\$83.20	\$96.33
	75	\$99.25	\$112.91
	90	\$115.30	\$129.48
	100	\$126.00	\$141.53
	120	\$147.40	\$162.63
Hybrid	20	\$180.20	\$191.06

AV-1011 is a bird repellent made by Arkion Life Sciences that can be applied to a bag of rice seed. The retail cost of AV-1011 is \$204.50 per gallon. AV-1011 is recommended at 18.29 fluid ounces per 100 hundredweight of rice seed. Table 4 lists the application rates and treatment costs by seeding rate.

Table 4. Seed treatment costs of AV-1011 blackbird repellent, 2017.

Pounds of Seed (Rate)	AV-1011 Amount (fl. oz.)	AV-1011 Treatment Cost
20	3.658	\$5.84
60	10.974	\$17.53
75	13.718	\$21.92
90	16.461	\$26.30
100	18.290	\$29.22

Therefore, the cost of treating rice seed with AV-1011 coupled with an insecticide, zinc, and a fungicide treatment will increase the total planting system costs. Tables 5 and 6 presents the adjusted planting cost, reflective of additional seed protection for water and drill-seeded rice. Total planting costs include custom aerial application expenses or grain drill delivery.

Table 5. Water-planted rice seed planting cost estimates.

Seed Technology	Seeding Rate	Seed Cost	AV-1011 Treatment	Total Planting Costs
Conventional	60	\$48.00	\$17.53	\$74.70
	75	\$54.00	\$21.92	\$85.61
	90	\$60.00	\$26.30	\$96.52
	100	\$64.00	\$29.22	\$103.79
	120	\$72.00	\$35.07	\$118.34
Clearfield	60	\$88.20	\$17.53	\$114.90
	75	\$104.25	\$21.92	\$135.86
	90	\$120.30	\$26.30	\$156.82
	100	\$131.00	\$29.22	\$170.79
	120	\$152.40	\$35.07	\$198.74
Hybrid	20	\$185.20	\$5.84	\$198.81

Table 6. Drill-planted rice seed planting cost estimates.

Seed Technology	Seeding Rate	Seed Cost	AV-1011 Treatment	Total Planting Costs
Conventional	60	\$43.00	\$17.53	\$72.79
	75	\$49.00	\$21.92	\$83.70
	90	\$55.00	\$26.30	\$94.61
	100	\$59.00	\$29.22	\$101.88
	120	\$67.00	\$35.07	\$116.43
Clearfield	60	\$83.20	\$17.53	\$113.86
	75	\$99.25	\$21.92	\$134.82
	90	\$115.30	\$26.30	\$155.78
	100	\$126.00	\$29.22	\$170.75
	120	\$147.40	\$35.07	\$197.70
Hybrid	20	\$180.20	\$5.84	\$196.90

The economic question becomes: Should a grower treat their rice seed with the AV-1011 initially or risk having to replant their field in the wake of blackbird damage? Therefore, if the grower chooses to treat their rice seed with AV-1011, an insecticide, zinc, and a fungicide at planting; will this cost outlay be less expensive as compared to having to replant the field at a later date? Replanting costs in Tables 7 and 8 are estimated to be double that of the initial seed cost and planting expenses per acre. These expenditures will vary based on the seeding rate and seed technology. It is noted that the replanting expenses (as those listed in Tables 1 and 2) reflect the initial cost for the “failed” rice stand and the subsequent seed material and delivery cost in-field.

Table 7. Water-planted rice seed, replanted.

Seed Technology	Seeding Rate	Total Planting Expenditure
Conventional	60	\$114.34
	75	\$127.39
	90	\$140.44
	100	\$149.14
	120	\$166.54
Clearfield	60	\$194.74
	75	\$227.89
	90	\$261.04
	100	\$283.14
	120	\$327.34
Hybrid	20	\$385.94

Table 7. Drill-planted rice seed, replanted.

Seed Technology	Seeding Rate	Total Planting Expenditure
Conventional	60	\$110.52
	75	\$123.57
	90	\$136.62
	100	\$145.32
	120	\$162.72
Clearfield	60	\$192.66
	75	\$225.81
	90	\$258.96
	100	\$283.06
	120	\$325.26
Hybrid	20	\$382.12

Finally, an economic comparison can be made by examining the rice seed treatment costs in Tables 5 and 6 with the replant cost estimates provided in Table 7 and 8. Across conventional, Clearfield, and hybrid rice seed technologies, it is more expensive to replant a rice stand as compared to treating the seed initially with AV-1011. Planting method did not vary the results, meaning that the seed cost and seeding rate are the chief determinants in the “treat versus replant” decision. Treating the seed with AV-1011 will warrant an additional cost outlay at planting. Relative to blackbird predator pressure in an area, the additional expenditure may be viewed as a risk management strategy. For a listed seeding rate, the cost of AV-1011 will average \$17.53 to \$35.07 per acre. Given the current market outlook for rice, margins will remain tight. Therefore the risk (or likelihood) of replanting a rice stand will erode a profit margin. Figure 1. The total planting investment will carry an average premium of \$43.78 for conventional and \$103.41 for Clearfield water-planted rice seed. For drill-planted seed, replanting will represent a total investment of and additional \$41.87 for conventional and \$102.57 for Clearfield seed per acre. These additional costs are greater than the cost of AV-1011 seed treatment. If a rice field were to be replanted (in the absence of using AV-1011), an additional \$43 to \$103 would be incurred by the producer. Assuming a rice price of \$10.00 per hundredweight, an additional 430 to 1,030 pounds of rice production would be required to offset the replanting costs.

Figure 1. Detailed economic analysis of AV-1011 use in rice fields.

Water Planted Rice Seed with AV-1011, additional seed treatment								Untreat.	Treat.	
Variey	Seeding Rate	Seed	AV-1011	Fung. Tmt.	Total	Planting	Total Cost	Initial Planting	Total to Replant	Replant AV-1011
Conv	60	\$48.00	\$17.53	\$2.10	\$67.63	\$7.07	\$74.70	\$57.17	\$114.34	\$131.87
	75	\$54.00	\$21.92	\$2.63	\$78.54	\$7.07	\$85.61	\$63.70	\$127.39	\$149.31
	90	\$60.00	\$26.30	\$3.15	\$89.45	\$7.07	\$96.52	\$70.22	\$140.44	\$166.74
	100	\$64.00	\$29.22	\$3.50	\$96.72	\$7.07	\$103.79	\$74.57	\$149.14	\$178.36
	120	\$72.00	\$35.07	\$4.20	\$111.27	\$7.07	\$118.34	\$83.27	\$166.54	\$201.61
CL	60	\$88.20	\$17.53	\$2.10	\$107.83	\$7.07	\$114.90	\$97.37	\$194.74	\$212.27
	75	\$104.25	\$21.92	\$2.63	\$128.79	\$7.07	\$135.86	\$113.95	\$227.89	\$249.81
	90	\$120.30	\$26.30	\$3.15	\$149.75	\$7.07	\$156.82	\$130.52	\$261.04	\$287.34
	100	\$131.00	\$29.22	\$3.50	\$163.72	\$7.07	\$170.79	\$141.57	\$283.14	\$312.36
	120	\$152.40	\$35.07	\$4.20	\$191.67	\$7.07	\$198.74	\$163.67	\$327.34	\$362.41
Hybrid	20	\$185.20	\$5.84	\$0.70	\$191.74	\$7.07	\$198.81	\$192.97	\$385.94	\$391.78

Drill Planted Rice Seed with AV-1011, additional seed treatment								Initial	Total to	Replant
Variey	Seeding Rate	Seed	AV-1011	Fung. Tmt.	Total	Planting	Total Cost	Planting	Replant	AV-1011
Conv	60	\$43.00	\$17.53	\$2.10	\$62.63	\$10.16	\$72.79	\$55.26	\$110.52	\$128.05
	75	\$49.00	\$21.92	\$2.63	\$73.54	\$10.16	\$83.70	\$61.79	\$123.57	\$145.49
	90	\$55.00	\$26.30	\$3.15	\$84.45	\$10.16	\$94.61	\$68.31	\$136.62	\$162.92
	100	\$59.00	\$29.22	\$3.50	\$91.72	\$10.16	\$101.88	\$72.66	\$145.32	\$174.54
	120	\$67.00	\$35.07	\$4.20	\$106.27	\$10.16	\$116.43	\$81.36	\$162.72	\$197.79
CL	60	\$83.20	\$17.53	\$2.10	\$102.83	\$11.03	\$113.86	\$96.33	\$192.66	\$210.19
	75	\$99.25	\$21.92	\$2.63	\$123.79	\$11.03	\$134.82	\$112.91	\$225.81	\$247.73
	90	\$115.30	\$26.30	\$3.15	\$144.75	\$11.03	\$155.78	\$129.48	\$258.96	\$285.26
	100	\$126.00	\$29.22	\$3.50	\$158.72	\$12.03	\$170.75	\$141.53	\$283.06	\$312.28
	120	\$147.40	\$35.07	\$4.20	\$186.67	\$11.03	\$197.70	\$162.63	\$325.26	\$360.33
Hybrid	20	\$180.20	\$5.84	\$0.70	\$186.74	\$10.16	\$196.90	\$191.06	\$382.12	\$387.96

References

- Arkion Life Sciences LLC. "AV-1011 Bird Repellent for Rice Seed - Safety Data Sheet". New Castle, DE. Issue Date: April 1, 2015.
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