

## **A) Trying To Make Sense of Soybean Seed and Herbicide Costs - Mark Loux**

Soybean growers can choose between four types of seed/herbicide systems in 2009, and there can be substantial differences in the cost of and revenue from these systems. The systems include nonGMO, Liberty Link (LL), Roundup Ready (RR), and Roundup Ready 2 Yield (RR2Y). What we have tried to do in this article is to come up with a logical comparison between systems, based on a sound herbicide program, with the goal of helping growers select a system. As much as anything, our intent here is to show that seed and herbicide choices can greatly affect the bottom line, and the time spent making this type of comparison is time well spent.

### **Background Assumptions for Comparison**

#### ***Seed Cost Used***

This comparison uses a count of 140,000 seed per unit, since seed companies are moving toward seed counts as the basis for units, and a seeding rate of 200,000 seeds/A. Both of these figures can have a substantial effect on seed costs per acre.

<b>Herbicide Resistance Family of Seed</b>	<b>Cost/Unit</b>	<b>Cost/Acre</b>
non-GMO	\$24	\$34
Liberty Link	\$34	\$49
Roundup Ready	\$37	\$53
Roundup Ready 2Y	\$55	\$78

We understand that there is a range in price for any type of seed, and there is seed available for more or less than the figures used here.

**Preplant Herbicide Program Cost**

Preplant herbicides should not vary much among these systems – they all typically include glyphosate or paraquat, 2,4-D ester, and a residual herbicide. This comparison uses the following for all four systems: glyphosate (0.75 lb ae/A) - \$10/A; 2,4-D ester (0.5 lb/A) - \$2.50/A; your choice of residual herbicide - \$12; application cost - \$6/A. Residual herbicide rates are often higher in nonGMO systems than in RR or LL, so we bump the cost of residual to \$15/A in nonGMO. Total preplant herbicide costs: nonGMO = \$34.25; LL, RR, or RR2Y = \$31.25.

**Postemergence Herbicide Program Cost**

The cost of postemergence herbicides can vary greatly among systems. The comparison here assumes that glyphosate is still effective enough that it does not need to be supplemented with other herbicides, and this is certainly not true for all fields. We have bumped the glyphosate rate to 1.1 lbs ae/A, since this has become a standard rate for many growers. Postemergence program cost and programs are shown in Table 2 and 3, costs include product and a \$6/A application cost.

Table 2. Cost of herbicides for a single postemergence application based on herbicide resistance traits.

Herbicide Resistance Trait	POST Program – 1st application	Cost/Acre
non-GMO	Flexstar (1.3 pts/A) + grass herbicide (Select; Fusion; etc) + MSO + AMS	\$36.75
Liberty Link	Ignite (22 oz) + AMS	\$16.75
Roundup Ready	glyphosate (1.1 lb ae/A) + AMS	\$21.75
Roundup Ready 2Y	glyphosate (1.1 lb ae/A) + AMS	\$21.75

Table 3. Cost of herbicides for two postemergence applications based on herbicide resistance traits.

Herbicide Resistance Trait	POST Program – 2nd Application	Cost/Acre	Total Cost/Acre of POST 1 & 2
non-GMO	Cobra (10 oz) + COC	\$21	\$57.75
Liberty Link	Ignite (22 oz) + AMS	\$16.75	\$33.50
Roundup Ready	glyphosate (0.75 lb ae/A) + AMS	\$16.75	\$38.50
Roundup Ready 2Y	glyphosate (0.75 lb ae/A) + AMS	\$16.75	\$38.50

It's probable that a second postemergence application is more likely to be needed in nonGMO soybeans than in LL or RR. Exceptions to this would occur in dense weed populations, or where the residual is used in fall instead of spring.

### Putting It All Together

Table 4 is a partial budget based on only seed and herbicide cost. Gross revenue is based on a 50 bu/A yield and a soybean price of \$9/bu for LL, RR, or RR2Y, or \$10.40/bu for nonGMO (realizing that this underestimates the premium that some growers are getting for nonGMO). This results in gross revenue of \$450 for the LL, RR, and RR2Y systems, and \$520 for the nonGMO system. We are not including costs other than seed and herbicides here, since the other costs should not vary among systems. We can make the same comparison omitting application costs, but these are also consistent among systems, and omitting them does not change the relative standings. What we're trying to come up with here are differences in revenue between systems based on seed and herbicide costs. The breakdown for each system follows (all figures on a per acre basis, and "cost" reflects seed, herbicide, and application).

<b>Herbicide Resistance Trait</b>	<b>Gross Revenue/A</b>	<b>Net Revenue/A One POST application</b>	<b>Net Revenue/A Two POST applications</b>
non-GMO	\$520	\$415	\$394
Liberty Link	\$450	\$353	\$336
Roundup Ready	\$450	\$344	\$327
Roundup Ready 2Y	\$450	\$319	\$302

We can complete the comparison by showing how much less the net revenue is for each system relative to the one with the highest revenue. The nonGMO system has the highest revenue here, and for a one-postemergence system the others are the following amounts lower: LL - \$62; RR - \$71; RR2Y - \$96. For a two-postemergence system, the others are the following amounts lower than nonGMO: LL - \$58; RR - \$67; RR2Y - \$92. It might be most appropriate to compare the one-postemergence system for the LL and RR soybeans to the two-postemergence system for nonGMO. The nonGMO revenue is still \$41 to \$75 higher for this comparison. It's also possible to credit the RR2Y soybeans with a 6% higher yield (we have no idea whether this is actually the case – we're just

weed scientists). Doing so results in the RR2Y coming in about even with RR soybeans, because the higher seed price offsets the potential increase in yield.

There are many different ways to configure this comparison, which is why it's best to run your own. There are also intangibles that need to be considered along with the numbers. Weed management is more difficult in nonGMO than in LL or RR soybeans, so there is a greater potential for increased herbicide costs or yield loss due to poor control. Fields with a history of poor weed control should not be planted to nonGMO soybeans. There is greater convenience and less risk of weed control failure in LL and RR soybeans, but our comparison shows the price of this convenience. In addition, fields where weeds have developed resistance to glyphosate can require more herbicide than indicated here. A good argument can be made for using LL soybeans in fields with a history of resistance to glyphosate and ALS inhibitors, because these can be tough populations to control with even the most comprehensive nonGMO or RR herbicide program.