It seems that each year there are more calls and questions about glyphosate tank-mix partners in Roundup Ready soybean. Based on all of the research I have done in this area over the past six years, my answer to the question of using a tank-mix partner with glyphosate falls into two categories:

1.) If you don’t think you have glyphosate-resistant weeds present.

If you have a field where the weeds (including waterhemp) have gotten tall and you DON’T suspect you have any glyphosate-resistant weeds present, then our research shows that increasing the rate of glyphosate will generally provide as good or better weed control than adding a tank-mix partner to glyphosate in Roundup Ready soybeans. There may be some exceptions to this statement if you are dealing with weeds that have a natural tolerance to glyphosate. For example, a Resource tank-mix can sometimes provide better morningglory control than even a higher-than-normal rate of glyphosate. Also, there are some weeds like Asiatic dayflower and field horsetail that we are probably never going to kill with glyphosate and a tank-mix can often help with these kinds of weed species. For the most part however, our research has shown that if there are no resistant weeds present, our “normal” spectrum of weeds in Missouri will usually be controlled as good or better by a higher rate of glyphosate compared to a standard glyphosate application with a tank-mix partner. Another way of saying it is to take the money you were going to spend on the tank-mix partner and put that money towards a higher rate of glyphosate per acre.

2.) If you suspect you have a glyphosate-resistant weed present.

The other side of the coin is if you suspect that you do have a glyphosate-resistant weed like waterhemp present, then a tank-mix partner can be very beneficial. Increasing the rate of glyphosate in this case will rarely provide better weed control and will almost certainly cost you more money.

In our research with glyphosate-resistant waterhemp (see black bars in graph below), we found that the addition of Ultra Blazer at 1.5 pts/A, Flexstar at 12 fl ozs/A, or Phoenix at 8 fl ozs/A to a standard rate of glyphosate provided from 77 to 85% control of glyphosate-resistant waterhemp six weeks after treatment. This is compared to only 22% control of glyphosate-resistant waterhemp that was achieved with a standard rate of glyphosate alone. As you can see from the remainder of the results in this graph, other tank-mix partners like Aim, Butyrac, and Firstrate were highly ineffective on glyphosate-resistant waterhemp. Resource provided some control compared to glyphosate alone, but as this graph clearly shows, there are better options for waterhemp control than Resource.

Although all of the research in this graph was conducted prior to the introduction of Cadet onto the marketplace, subsequent studies we have conducted with this herbicide have shown that tank-mixes of this product with glyphosate are also ineffective on glyphosate-resistant
waterhemp, or even on glyphosate-susceptible waterhemp that has gotten too tall. The label of this product clearly shows control of 2-inch waterhemp with 0.9 fl ozs of Cadet per acre. This does not translate into control of 24-inch waterhemp with tank-mixes of the same rate!

If you suspect you have other glyphosate-resistant weeds like common or giant ragweed present, then tank-mixes of the PPO-inhibiting herbicides like Ultra Blazer, Flexstar, and Cobra/Phoenix are probably still going to be your best option. Although for the most part Firstrate and some of the other ALS-inhibiting herbicides continue to have good activity on common and giant ragweed in Missouri, these herbicides are also very sensitive to weed height. This means that when the ragweeds get over one foot or so in height, the likelihood of controlling them with these herbicides goes down dramatically.

Finally, as far as tank-mix partners are concerned I think one of the biggest things we need to avoid is the temptation to use a tank-mix partner just because it only adds another $1 or $2 per acre to the total application cost. Also, we should be aware of the potential for antagonism of some of these products with glyphosate. Just because a product appears to control weeds quicker, that doesn’t always mean that the product or tank-mix treatment is better. In our research where we have the ability to compare different tank-mix treatments side-by-side, we will often rate a tank-mix treatment higher than a glyphosate-only treatment 3- to 5-days after application. However, when we come back and rate those same treatments 10- to 14-days after application, we will often see no differences in overall weed control between the tank-mixes and the glyphosate-only treatment.