In recent years, the use of cover crops has seen a significant resurgence. Cover crops can provide many benefits to pasture and cropping systems. They can provide additional grazing outside the primary growing season, weed suppression and a living mulch to protect the soil from erosion. Depending on the cover crop species, they can add nitrogen to the soil and recycle nutrients from deeper layers of the soil profile. They can also improve soil health, structure and water holding capacity. While cover crops have the potential for all these benefits, they also add another layer of complexity to the production system. Cover crop plant selection, establishment, residue management, water use and weed management must all be taken into consideration when adding them to the production system.

Unfortunately, many herbicides used in pasture and crop production have soil residual activity that can carry over to cause damage or stand failure for the subsequent cover crop. The primary resource for knowing if a herbicide may have activity on the intended cover crop is the Rotational Crop or Replanting section of the herbicide label. The wide variety of species used for cover crops presents a particular challenge since there is a good chance the label will not specifically address the cover crop(s) being considered. In lieu of specific label guidance, a general rule of thumb is: if an herbicide has soil activity on weeds that are similar to the cover crop, it will likely have activity on the cover crop. In some situations, performing a soil bioassay is the only way to be reasonably sure it is safe to plant the cover crop. Many herbicide labels include specific instructions for how to conduct a soil bioassay, or a general method is available at http://extensionpublications.unl.edu/assets/pdf/g1891.pdf.

While the herbicide label provides a good starting point for estimating the risk of carry-over to the cover crops, several factors affect whether the herbicide may break down faster or slower. Microbial activity is a primary driver of breakdown for many herbicides, so rainfall and temperature are often the most important factors. Warm, moist soil conditions favor enhanced microbial activity and faster breakdown; cool, dry conditions reduce microbial activity, resulting in longer herbicide persistence. Soil pH may also affect length of persistence. Some herbicides, particularly the sulfonylureas (Ally, Glean, Finesse, etc.),
etc.), persist much longer at higher pH levels. Soil type and organic matter can also affect herbicide persistence. Soils with a high clay or organic matter content can bind with herbicides and prevent microbes from breaking them down. The herbicides may then be released over a longer time period and affect subsequent crops. Consider all these factors when estimating how long your herbicide may persist.

So, how do you use this information to make decisions about your cover crop options? First, determine if the expected benefit of the cover crop is worth more than not using the ideal herbicide in the preceding cash crop. If the expected cover crop benefits are more valuable than the expected weed control from the planned herbicide, change the weed management plan to use herbicides with no, or shorter, soil residual so you can use the cover crops of choice. If the expected weed control from the planned herbicide is more valuable, choose species for the cover crop blend that will be tolerant of the herbicide residue.

Cover crops have the potential to be a valuable component of production systems. Do not let the wrong herbicide and cover crop combination diminish that opportunity.