Weed control essential after hail

It seems the punches keep coming this summer in southeast Wyoming and western Nebraska - flooding, fire, and hail. Weeds use these events as opportunity to compete for resources which might not have been previously available. Common factors in competition are water, nutrients, and sunlight. After a hail storm, sunlight may no longer be limiting in a system as the crop canopy is destroyed and light can now penetrate through to the soil surface. This is when weeds can take over a field.

Similar to the human eye, plants recognize various wavelengths within the entire light spectrum. Two of the most important types of light for plants are “red” and “far-red” light. When plants contain chlorophyll, light can be transformed into energy for the plant by absorbing red light. Far-red light is allowed to penetrate through the leaf. Similarly, seeds of a plant rely on red and far-red light by utilizing a system of molecules, called phytochromes, to determine the best time to germinate. When phytochromes are exposed to more red than far-red light, germination is initiated. If there is more far-red light sensed by the phytochromes, the seed will typically not germinate. Essentially, all of this means seeds may not germinate if they are shaded.

Under a full crop canopy, most of the red light coming into the system is absorbed by plant leaves and only far-red light is reaching the soil surface. When a hail storm beats up the leaves of a crop, more red light will reach the soil surface and therefore encourage germination of weed seeds. To take advantage of other resources, weeds typically initiate germination quickly after sensing an increase in red light. This is part of the reason weeds tend to flourish after a disturbance as they can sense when competition is low by the amount of red light being received.

Several other factors contribute to the weed pressures after a hail event. Despite having the proper amount of red and far-red light available, a seed may still remain dormant if other conditions are not met. These can include moisture, scarification, temperature, and depth. Leaf litter may also impact weed seed germination. For a period of time, the fallen leaf matter may lay on the soil surface and limit weed growth. While the seed may have germinated due to the light quality change, the physical barrier may prevent weeds from emerging after germination.

Entire careers are dedicated to understanding these responses as various plant species can germinate under different amounts of red and far-red light. For example, nurseries have found certain species, such as delphiniums, prefer a high amount of far-red light in order to germinate. Light quality can also affect a plant after it has germinated. A plant growing among competition may have elongated stems, petioles, and leaves. The plant directs more energy to growing taller or spreading wider in order to obtain more red light before it can be absorbed by other plants.

Control of these weeds is very site-specific. If considering re-planting into a late summer crop, control will become necessary as weeds will have a head start compared to a crop which needs planted. Even if the field will be left fallow until the next season, weed control may be necessary to prevent seed production of annual species. This is especially important for weeds which were already emerged and protected from hail under the crop canopy but now have unrestricted access to resources. Further consideration should be taken when choosing herbicides for late season weed control as certain herbicides may impact crops planted next season. Even if using a herbicide with a short planting restriction, keep in mind a late season application will mean reduced microbial, chemical and light degradation of the applied herbicide.

Stay diligent in managing for weeds, despite the curve balls Mother Nature throws our way. For more information, contact your local weed and pest control office or Goshen County Weed and Pest at: (307) 532-3713, gocoweeds@embarqmail.com, or <https://www.facebook.com/gocoweeds>.

