Weed Management Tips in Preparation of 2022 Herbicide Shortages

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Many growers in the US have been focused on predicted herbicide shortages in the upcoming field season. While the primary concerns have surrounded glyphosate and glufosinate, there is increasing apprehension that active ingredients of importance to vegetable growers may also be affected. Although the supply change is dynamic, chemical stocks may become, and remain, tight at the local or regional level as growers try to fill gaps in their toolboxes. Heading into the new year, consider the following for the 2022 season.

1. Successful weed identification, regular scouting, and detailed field records are crucial for optimizing weed control success. The first step in developing a novel herbicide program is knowing what species are present and determining which combination of products will be the most effective (and affordable) at suppressing them. Not all active ingredients are equally useful against all species and careful consideration needs to be paid to each chemical's spectrum of control.

2. Familiarize yourself with chemical substitutes before applying them over many acres. Some switches may be intuitive (e.g. using Poast (sethoxydim) or Assure II (quizalofop) in place of clethodim where allowed) while others may be more complicated (e.g. using a tank-mixture in place of a single product). In addition to knowing a novel product's target species, become acquainted with a new herbicide's labeled rate structure and spray volume, use patterns (e.g. application timing), environmental limitations (e.g. temperature restrictions), adjuvant requirements, and potential interactions with tank-mix partners. Not all chemicals are compatible with each other, and antagonism can reduce weed control efficacy while enhancing crop injury concerns. Contact your Extension Specialists if you have any doubt regarding physical compatibility and efficacy of herbicide mixtures. Herbicide damage may be observed across seasons so pay attention to rotation restrictions. Some active ingredients may already be part of registered pre-mixes in certain crops (i.e. bentazon, which is the active ingredient in Basagran, is also part of Varisto).

3. Soil-applied, preemergence herbicides can be useful tools for suppressing weeds that emerge with the crop; these plants are the most injurious as early season competitors are very likely to reduce yields. Like postemergence products, soil-applied herbicides must be carefully selected to balance crop safety with weed control needs. Pay attention to rate requirements according to soil type, as this can influence both efficacy and injury. Pre-emergence herbicides need to be moved into the soil solution (either physically or via rainfall or irrigation) where they are taken up by emerging weed seedlings; delays in incorporation can reduce overall performance if some weeds continue to germinate and emerge under low soil moisture conditions. Delays in herbicide activation may facilitate the degradation of some products susceptible to breakdown in sunlight (i.e. photolysis). When possible, use overlapping residual products to suppress weed

emergence throughout the season. Some active ingredients (e.g. oxyfluorfen (Goaltender)) may have both preemergence and postemergence activity.

4. Timing matters. Postemergence weed control should be undertaken when weeds are small and succulent. Herbicide labels will have specific recommendations regarding the optimal size for treatment. Because many foliar-applied herbicides can also damage crops, always follow label guidance to reduce risk of injury. For instance, in 2021 New York research trials, applications of postemergence herbicides made before the first trifoliate leaf stage in snap beans resulted in up to 20% yield loss because of crop stunting.

5. Optimize herbicide application rate for postemergence (i.e. foliar) applications. Target using the lowest effective herbicide rate to stretch your herbicide supply. For example, instead of using 32 or 44 oz/acre of a Roundup brand product, consider using the standard rate on the label such as 22 oz/acre for Roundup PowerMax. Again, timing of application with regards to weed size will be critical to optimize your herbicide supply. The smaller the weeds, the less herbicide you will have to apply to control it! Therefore, frequent scouting as highlighted in point one will be very important to optimize your herbicide application and stretch your herbicide supply.

6. Don't skimp on adjuvants. If herbicides are going to be in short supply, then there may be fewer shots to control weeds. If there are fewer shots available, make every shot count as much as possible. Follow label recommendations regarding the inclusion of water conditioners, surfactants, etc…, to maximize product efficacy. Refer to point number two about potential compatibility concerns when tank-mix partners are involved.

7. Consider non-chemical weed control strategies when and where appropriate. This includes hand weeding, cultivation, altering planting dates to avoid particularly troublesome species, and using stale seedbed practices. Like herbicides, physical and cultural practices are not always effective against all species. While cultivation can control many weed seedlings, particularly at the white-thread stage, soil disturbance is less effective against well-developed plants. In the case of some perennials (for example, field bindweed or Canada thistle), cultivation events can break up and disperse root fragments within and across fields, facilitating dispersal. Ultimately, plan for hand-weeding escapes prior to the weeds setting seed as this will help reducing the weed seedbank for future growing seasons.

2022 could be a difficult year if many crop production and protection chemicals are limited. Herbicide shortages could impact weed control success in the coming growing season…and beyond. Weeds that are not controlled in 2022 will set seed that will cause problems in the future. Planning now can help with weed management in both the short and long term.