Herbicide efficacy depends on application windows

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BROADLEAF/GRASS HERBICIDE APPLICATION TIMING GUIDE

for winter and spring wheat

Author's note—This guide was originally produced by Joe Yenish, PhD. This author acknowledges and thanks Mr. Yenish for his contributions to the current guide.

The timing of herbicide applications in wheat is based on growth stages of the crop and weeds. Applying herbicides according to the labeled stage of growth minimizes crop injury. Moreover, if applications are made outside of the range of winter wheat growth stage specified on the herbicide label, it is a violation of the law.

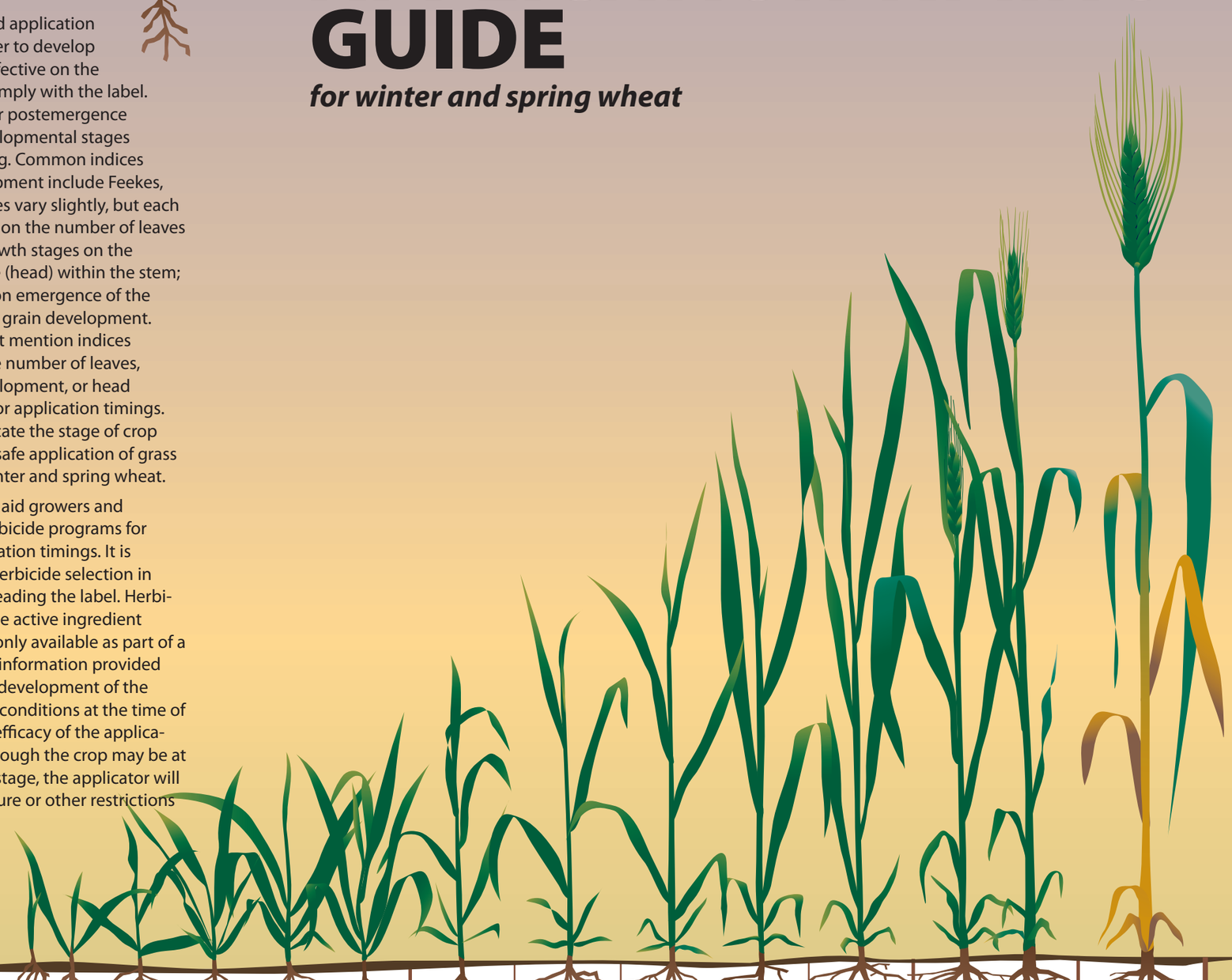
Preemergence

Application timings such as preplant or preemergence are relatively straightforward with regard to when herbicides are applied. However, the reason a particular herbicide is labeled for preplant or preemergence applications is often less straightforward. Certain herbicides, such as triallate (FarGo) or trifluralin (Treflan), will only control weeds as they germinate, with no activity on plant foliage. Other herbicides, such as glyphosate (Roundup) or paraquat (Gramoxone SL 2.0), control emerged weeds before crop emergence, but would kill the crop if it were emerged. Still other herbicides, such as sulfosulfuron (Maverick) and chlorsulfuron (Glean), will control emerged weeds and weeds that emerge after the application while not injuring an emerging or emerged crop.

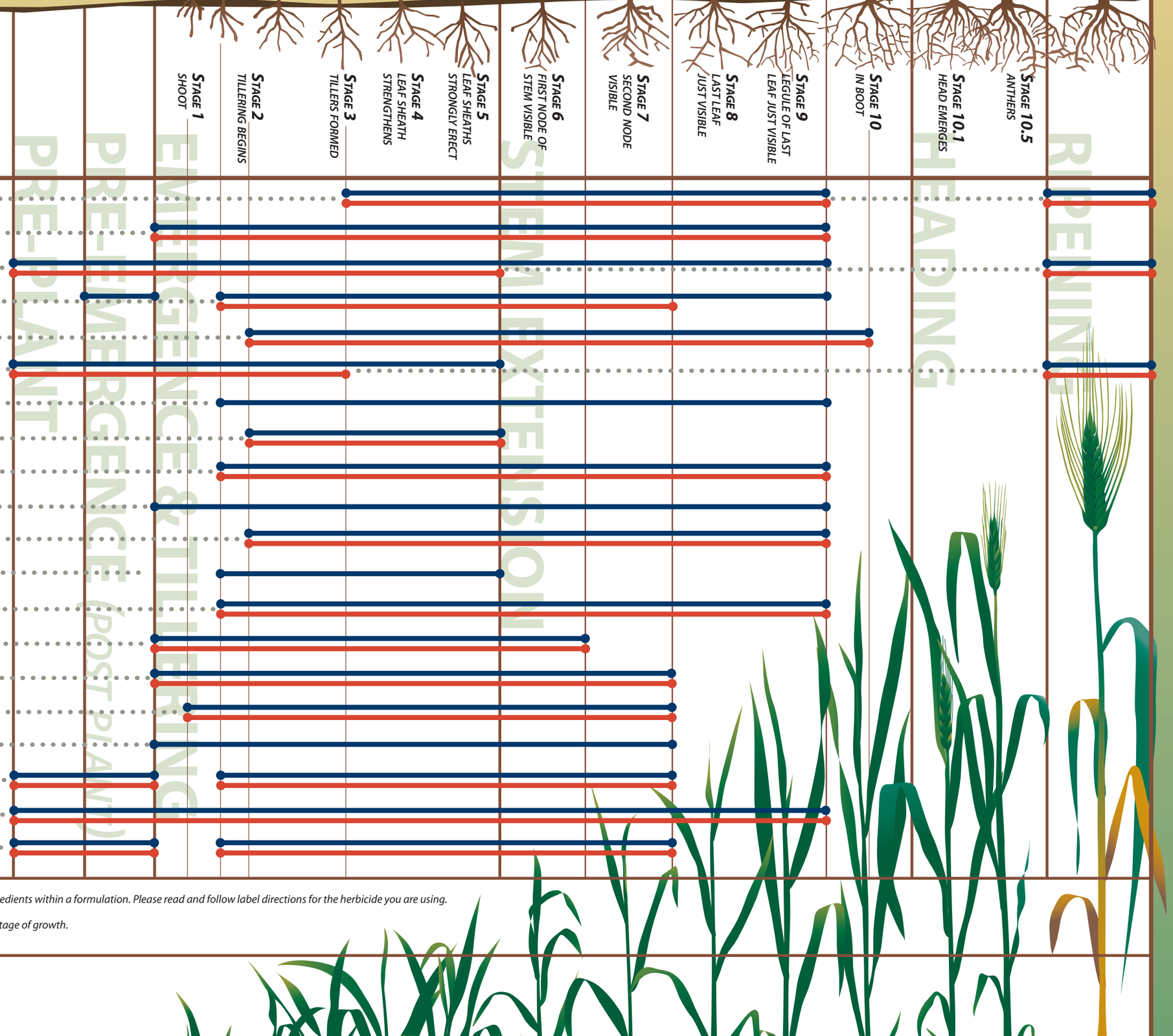
Postemergence

Application timings for postemergence herbicides are almost entirely based on development of the wheat crop. Developmental stages are not based on the size of the crop, but rather on the number of leaves, presence of tillers, emergence of stem nodes or flag leaf, and the development of the head. Generally, the label for an individual herbicide specifies a window of opportunity for application of several weeks based on the expected development of the crop. However, when herbicides are combined (tank mixed), the window of opportunity for a labeled application may be reduced to only one or two weeks. Growers and agronomists need to be aware of the labeled application timings of all herbicides in order to develop herbicide programs that are effective on the weeds, safe to the crop, and comply with the label. Nearly all herbicides labeled for postemergence applications in wheat use developmental stages to determine application timing. Common indices describing cereal grass development include Feekes, Zadoks, and Haun. These indices vary slightly, but each categorize early growth stages on the number of leaves or tillers on a plant; middle growth stages on the development of nodes or spike (head) within the stem; and late growth stages based on emergence of the head, exposure of anthers, and grain development. Wheat herbicide labels may not mention indices directly. However, most use the number of leaves, tillering, jointing, flag leaf development, or head development as benchmarks for application timings. The accompanying charts indicate the stage of crop development allowing for the safe application of grass and broadleaf herbicides in winter and spring wheat.

This information is provided to aid growers and agronomists in developing herbicide programs for wheat based on labeled application timings. It is intended as a quick guide for herbicide selection in wheat, not as a substitute for reading the label. Herbicides listed contain only a single active ingredient unless the active ingredient is only available as part of a prepackaged formulation. The information provided does not consider growth and development of the targeted weed, environmental conditions at the time of herbicide application, nor the efficacy of the application. Keep in mind that even though the crop may be at the appropriate development stage, the applicator will need to comply with temperature or other restrictions stated on the label.



BROADLEAF

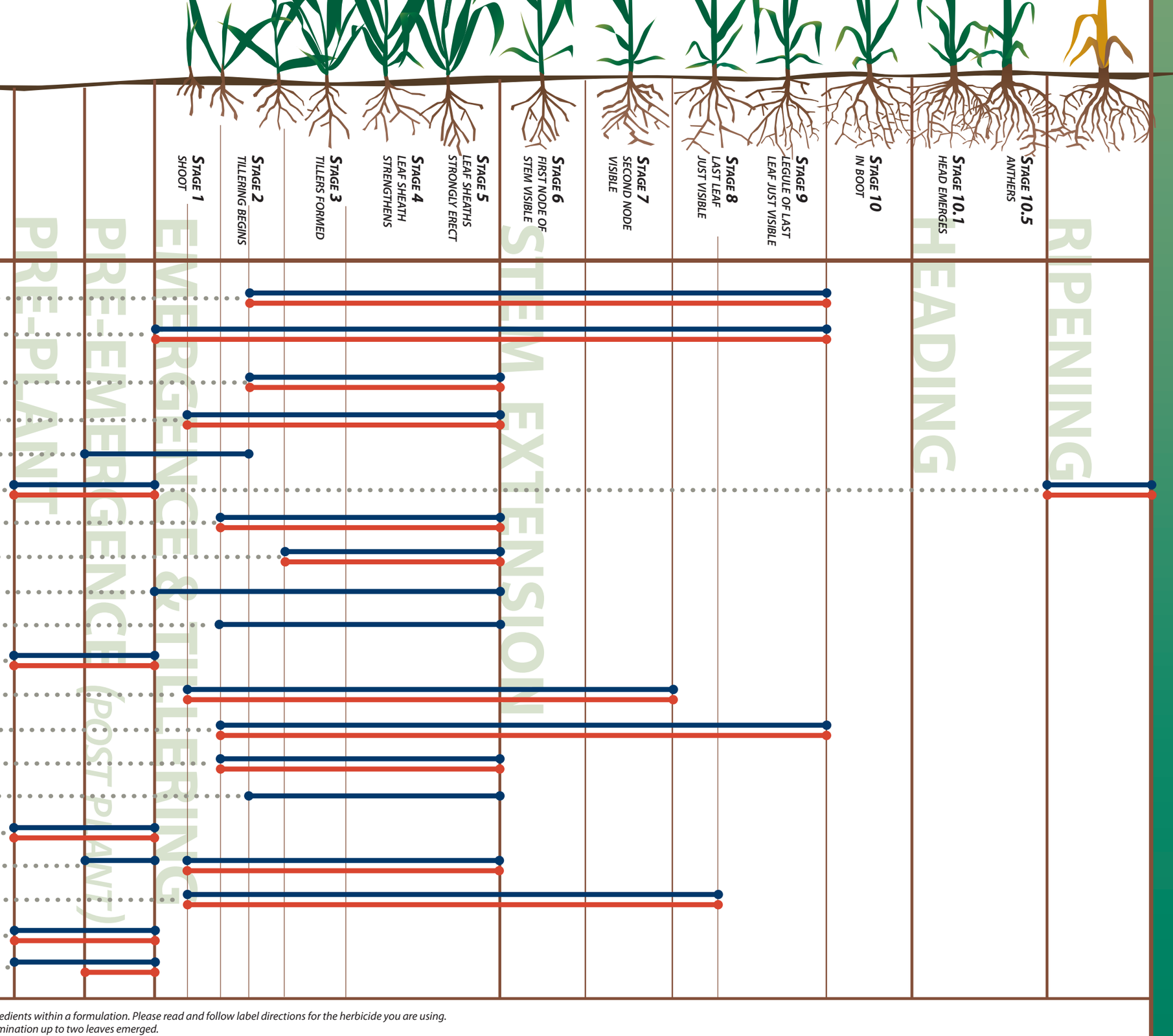


- 2,4-D*
- BROMOXYNIL *(BUCTRIL)*
- CARFENTRAZONE *(AIM)*
- CHLORSULFURON *(GLEAN XP)*
- CLOPYRALID *(STINGER)*
- DICAMBA*
- DIURON†† *(KARMEX, OTHERS)*
- FLORASULAM + MCPA *(ORION)*
- FLUROXYPYR *(STARANE ULTRA)*
- LINURON** *(LINEX, OTHERS)*
- MCPA*
- METRIBUZIN*
- METSULFURON *(ALLY XP)*
- PROSULFURON *(PEAK)*
- PYRAFLUFEN *(VIDA)*
- PYRASULFOTOLE + BROMOXYNIL *(HUSKIE)*
- PYROXASULFONE *(ZIDUA)*
- THIFENSULFURON *(HARMONY SG)*
- TRIASULFURON *(AMBER)*
- TRIBENURON *(EXPRESS)*

† Specific herbicides may have different application timings due to multiple active ingredients within a formulation. Please read and follow label directions for the herbicide you are using.
** Only ester formulations of 2,4-D are labeled for harvest aid (ripening) applications.*
†† Label states applications may occur in fall 3–6 weeks after planting up to the boot stage of growth.
*** Early application timing will vary by expected annual precipitation.*

WINTER WHEAT
SPRING WHEAT

GRASS



- CLODINAFOP *(DISCOVER)*
- FENOXAPROP* *(PUMA)*
- FLORASULAM + FLUROXYPYR + PYROXULAM *(GOLDSKY)*
- FLUCARBAZONE *(EVEREST 2.0)*
- FLUFENACET + METRIBUZIN†† *(AXIOM)*
- GLYPHOSATE *(ROUNDUP, OTHERS)*
- IMAZAMETHABENZ *(ASSERT)*
- IMAZAMOX *(BEYOND)*
- MESOSULFURON *(OSPREY)*
- METRIBUZIN
- PARAQUAT *(GRAMOXONE SL 2.0, OTHERS)*
- PENDIMETHALIN *(PROWL H_2O)*
- PINOXADEN *(AXIAL XL)*
- PROPOXYCARBAZONE *(OLYMPUS)*
- PYROXSULAM *(POWERFLEX)*
- SAFLUFENACIL *(SHARPEN)*
- SULFOSULFURON *(MAVERICK)*
- TRALKOXYDIM *(ACHIEVE)*
- TRIALLATE *(FAR-GO)*
- TRIFLURALIN *(TREFLAN, OTHERS)*

† Specific herbicides may have different application timings due to multiple active ingredients within a formulation. Please read and follow label directions for the herbicide you are using.
†† Label states that if wheat is planted 1.5" or deeper, application may be made at germination up to two leaves emerged.
** Label allows applications up to 70 days prior to harvest.*