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For the attention of the Herbicide Resistance Management Communities,

RE: Important changes to the Global Herbicide Resistance Action Committee (HRAC)'s herbicide mode of action classification system

On March 1, 2020 the Global Herbicide Resistance Action Committee completed an overdue update of its mode of action (MoA) classification system.

Changes since the last update in 2010 include:

- transition from alphabetical to numerical mode of action codes;
- addition of four new or reclassified MoAs;
- rationalization of chemical family names;
- addition of 14 new active ingredients;

Details of the changes can be found on hracglobal.com or by clicking [here](#). In addition, the updated 2020 MoA poster is now [available to download](#). Revised MOA numerical codes as well as legacy HRAC alphabetical codes for herbicide active ingredients can be searched using the web lookup tool [here](#) or using HRAC's mobile App available on the iOS App Store or Google Play Store.

Why was the MoA classification revised?

The previous revision of the Global HRAC MoA classification was carried out in 2010. Therefore, this update was necessary in order to capture active ingredients commercialized since then, as well as to reflect the current state of knowledge for MoA and chemical family classification.

With this update, Global HRAC will also transition from letter to numerical MoA codes. Global HRAC believes that a numerical code system is more globally relevant and sustainable, compared to an alphabetic code based on English/Latin letters. In geographies where the Latin alphabet is not used and/or where literacy rates are low, most everyone understands Hindu-Arabic numerals. Another concern about the English alphabet is that there are only 26 letters. Today there are 25 recognized MoAs, including four new ones since the last revision in 2010. Over the next 10 years we anticipate the addition of two to four new modes of action, which will exceed the 26-letter maximum. Furthermore, IRAC already uses a numerical system, while FRAC is transitioning from letters to numbers.

Global HRAC considered several numerical code options, but in the end agreed to align with the Weed Science Society of America (WSSA) so that there is a single numerical code shared by WSSA and Global HRAC. This decision facilitated the agreement that WSSA and Global HRAC will support a common numerical code going forward.

Although this is a positive step forward, it does not mean that Global HRAC will immediately replace its current letter codes. Countries currently using letters will require a long transition period including education and communication, before a change to numbers can be implemented. During this period, Global HRAC will continue to support legacy letter-based codes.

How was the MoA revision accomplished?

Global HRAC appointed a working group to review legacy HRAC MoAs and propose an updated MoA classification system. The working group was comprised of technical experts in herbicide chemistry, weed biology, plant physiology and biochemistry from the CropLife International member companies. Any member companies not represented in the group were continuously advised of progress, and they approved interim and final recommendations from the group.

In the final stages, input was also solicited from the regional HRAC organizations, as well as the WSSA, in order to ensure global harmonization and consensus going forward.

The Working Group

- Rex Liebl, BASF, Research Triangle Park, North Carolina, U.S.
- Jeff Epp, Corteva, Indianapolis, Indiana, U.S.
- Hubert Menne, Bayer AG, Frankfurt, Germany
- Bernd Laber, Bayer AG, Frankfurt, Germany
- James Morris, Syngenta, Jealott's Hill, U.K.
- Matthias Witschel, BASF, Ludwigshafen, Germany

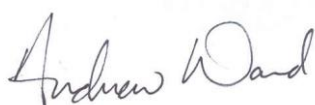
The working group was tasked to revise and/or update the list of active ingredients, modes of action and chemical family classes. In addition, Global HRAC took up the challenge of revising the MoA codes.

Next Steps

In the coming weeks and months, it is critical to communicate the details of this new MoA classification system to key stakeholders, including university researchers, regional and country weed science societies, and regulatory officials. This requires everyone's help. We will be adding brochures, infographics, and presentations to hracglobal.com to help you deliver this message.

Finally, and perhaps most importantly, Global HRAC is working on a strategy to assist those countries currently using the legacy HRAC alphabetical MoA codes to transition to the new numerical codes. Global HRAC is committed to facilitate this transition by supporting local education and policy needs. We will keep you updated of developments as we move forward together.

Yours sincerely,



Dr Andrew Ward
On behalf of global HRAC and CropLife International