

Herbicide Resistance Management – Stewardship Checklist

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As part of the registration and reregistration review of some herbicides BEAD reviews the stewardship and resistance management plans to determine if they have addressed the elements of concern to the Agency. The following table lists items that BEAD will consider when reviewing these plans.

Nine of the eleven items will be instructions placed on the label to provide information to the user (elements 1 through 7, 10 and 11 where applicable), and three of the elements will be instructions to the registrant (elements 8, 9, and 11 where applicable).

Table 1. Elements of resistance management or stewardship plan

Element	Description
1	List Mechanism of Action (MoA) Group Number. ➤ Registrant is responsible to place on label.
2	List seasonal and annual maximum number of applications and amount. ➤ Registrant is responsible to place on label.
3	Resistance Management language from PR Notice 2001-5, and/or Best Management Practices (appropriate to crop) from Weed Science Society of America (WSSA) & Herbicide Resistance Action Committee (HRAC), and/or HRAC proposed guidelines for herbicide labels. ➤ Registrant is responsible to place on label.
4	Include instructions for scouting before and after application. ➤ Registrant is responsible to place on label. ➤ User is responsible to follow recommendations.
5	Definition of Likely Resistance. ➤ Registrant is responsible to place on label.
6	User should report lack of performance to registrant or their representative. ➤ Registrant is responsible to place on label. ➤ User is responsible to follow recommendations.
7	List confirmed resistant weeds in a separate table and list effective or recommended rates for these weeds with the table. ➤ Registrant is responsible to place on label.
8	Registrant report new cases of likely and confirmed resistance to EPA and users yearly. This will be in addition to any adverse effects reporting. ➤ Registrant is responsible.
9	For sites of high concern provide growers with: <ul style="list-style-type: none"> • Resistance Management Plan • Remedial Action Plan (to control resistant weeds this season or next season) • Educational materials on resistance management Plans should be locally developed and easily modified. We recommend registrants work with Extension, Consultants, Crop Groups, HRAC, & USDA. ➤ Registrant is responsible to provide educational materials

10	For combination products with multiple MoA, list which herbicide is controlling which weed (a 3 way mixture may only have 1 effective MoA for some problem weeds). List minimum recommended rate if resistance is suspected. ➤ Registrant is responsible to list on label or otherwise provide information.
11	Any additional specific requirements (e.g. mandatory crop rotation, unique agronomic aspects, additional training, time limited registration, etc.). ➤ Registrant is responsible.

Footnote: Mechanism of Action Group number comes from the WSSA.

Table 2. Herbicide Resistance Categories of Concern*

Low Concern	Moderate Concern	High Concern
MOA with no resistance weed species in the U.S.	MOA with a few resistant weed species in the U.S.	<ul style="list-style-type: none"> • Any new herbicide with a new or novel mechanism of action, or • Herbicide resistant crop(s) for that technology (conventionally bred or GM), or • MOA with the most resistant weeds in U.S.
<ol style="list-style-type: none"> 1. MoA on Label 2. List seasonal and annual maximum number of applications and pounds 3. Resistance management language from PRN 2001-5 or BMPs 4. Scout before and after application 	<ol style="list-style-type: none"> 5. Definition of likely and confirmed resistance 6. Farmer should report lack of performance to registrant or its agent 7. List confirmed resistant species in separate table and list effective or recommended rates for these weeds with the table 8. Registrant report new cases of likely and confirmed resistance to EPA & users yearly 	<ol style="list-style-type: none"> 9. Provide growers with: Resistance Management Plan, Remedial Action Plan, Educational materials on resistance management 10. For combination products with multiple MoAs, list which herbicide is controlling which weed and minimum recommended rate 11. Any additional specific requirements (e.g. mandatory crop rotation, unique agronomic aspects, time limited registration, etc.).

* If new resistant weed species are found a MoA may move to higher level of concern.

REFERENCES

HRAC. 2015. Herbicide Resistance Management, Proposed HRAC Stewardship Guidelines for Herbicide Labels. Accessed online on September 24, 2015 at <http://www.hracglobal.com/pages/hracstewardshipguidelinesforherbicidelabels.aspx>

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