COLORADO
Department of Agriculture
Division of Plant Industry

September 12, 2024

Eric W. Bohnenblust, Ph.D, Chief
Minor Use and Emergency Response Branch (MUERB)
Registration Division, Office of Pesticide Programs
1200 Pennsylvania Ave. NW
Washington, DC 20460

RE: Section 18 Emergency Exemption for Goltix 700 SC for the control of Palmer Amaranth in Sugar Beets; Revised numbers for total amount applied

Dear Mr. Bohnenblust:

Attached is a revised request for the authorization of Goltix 700 SC in Sugar Beets. The changes include a mathematical correction for the total amount of pesticide applied from 940,800 fl oz to 1,437,952 fl oz and of 65,606.56 total lbs of metamitron applied, from 42,924 lbs. The numbers are also updated to reflect a second application. These changes are reflected on pages 1 & 2 of the application.

Please let me know if there are any questions or concerns.

Sincerely,

Jolynn Morris
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Pesticide Section
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REQUEST FOR SPECIFIC EXEMPTION

GOLTIX 700 SC (Metamitron) on Sugar Beets

Submitted by the Colorado Department of Agriculture

I. Contact Persons and Qualified Experts

A. State Contact

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B. Qualified Experts

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C. Grower Representative

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D. Registrant

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II. Description of Pesticide Requested

The active ingredient Metamitron is currently unregistered in the United States by the Environmental Protection Agency ("EPA"). The proposed product is available currently within the European Union, under the trade name Goltix ® 700 SC.

Registrant: ADAMA
Pesticide name: Goltix 700 SC
EPA Reg No.: N/A, EPA company no. 66222
Active Ingredient: Metamitron (1,2,4-Triazin-5(4H)-one, 4-amino-3-methyl-6-phenyl)
(58.3%, with 5.84 lbs. of metamitron per gallon)

III. Description of Proposed Use

A. Treatment Sites

Sugar beets are grown in the Northeastern section of Colorado (NE and E Central USDA districts). Commercial sugar beets in Colorado are grown under contract with/by members of the Western Sugar Cooperative ("Western Sugar").

Sugar beets are planted in at least eleven counties in Colorado. This request will be limited to ten counties experiencing the greatest pest pressure: Adams; Boulder; Larimer; Logan; Morgan; Phillips; Sedgwick; Washington; Weld and Yuma.

B. Method of Application

Application will be completed by ground application only.

C. Application Timing

Planting season spans from Mar. 30 to May 10, weather dependent. The initial application of metamitron would occur within 24-48 hours of planting. CDA is requesting a use period from March 30, 2025 through May 31, 2025.

D. Rate of Application

The rate will be 64 fl. oz/ acre, with a maximum of two applications permitted in the event of crop failure.

E. Maximum Number of Applications

One application per treatment site is expected to be applied per field, however CDA is requesting the ability for an additional application for replanting due to crop failure.

F. Total Number of Acres Treated

There are approximately 24,000 acres of sugar beets grown annually in Colorado. Applications of metamitron would be limited to the following counties experiencing palmer amaranth pressure: Adams; Boulder; Larimer; Logan; Morgan; Phillips; Sedgwick; Washington; Weld; and Yuma.

CDA requests this exemption to cover up to 22,468 acres, which is approximately 93.6 % of total sugar beet acreage planted annually.

G. Total amount of pesticide to be Used

Using the maximum rate allowed by the emergency use label (64 fluid ounces per acre) times the number of acres potentially treated (22,468) results in an estimated total amount of pesticide to be

used of 1,437,952 fluid ounces or 11,234 gallons. Goltix 700 SC contains 5.84 pounds of active ingredient per gallon of formulated product, which would therefore account for a total potential of 65,606.56 pounds of active ingredient applied.

The label permits an additional application of GOLTIX 700 SC at 64 fl oz/acre to the field, prior to emergence, if the initial planting of sugar beets fails to produce a uniform stand. If every planting required replanting, the maximum potential amount of pesticide applied would be 131, 213.12 lbs of active ingredient applied.

H. Other Applicable Restrictions

The draft emergency use label lists "warning" as the hazard word and requires a 12-hour Restricted Entry-Interval. The label also prohibits applications by ground within 100 feet of aquatic areas, prohibits cultivation within 10 feet of an aquatic area to allow for a vegetative filter strip, to only apply during alternate years in fields adjacent to aquatic areas, and prohibits the use of sugar beet leaves for food or feed. The label prohibits planting of rotational crops within 30 days for the last application.

IV. Alternative Methods of Control

A. Herbicides

The following active ingredients are currently registered in Colorado and labeled for use to control Palmer amaranth in sugar beets: glyphosate (only glyphosate tolerant varieties of sugar beets), glufosinate-ammonium (pre-plant burn-down only), dimethenamid-P, S-metolachlor, and trifluralin. However, other herbicides are used in sugar beets that don't list Palmer Amaranth but do list "pigweed" or other related species. The following discussion identifies the use pattern and reasons why all the available herbicides labeled are either ineffective or losing effectiveness on control of Palmer Amaranth.

Glyphosate

The large majority of sugar beets planted in the state are glyphosate tolerant varieties. While glyphosate has provided reliable broadleaf weed control since glyphosate-tolerant sugar beet varieties were introduced, glyphosate weed resistance in Palmer amaranth has been confirmed in Colorado. In 2016, resistance was confirmed in 10-20% of Colorado Palmer Amaranth samples tested. When collected from fields showing a lack of control after glyphosate, 100% of the samples were resistant.

Cycloate (Ro-Neet) and ethofumesate (Nortron) are applied to sugar beets either before planting (usually incorporated) or soon after planting but before sugar beet emerges. They only control weeds that emerge after treatment. They can provide some short-term control of Palmer Amaranth, but control will break fairly quickly. An application of a postemergence herbicide is then required to control Palmer Amaranth. Typically, glyphosate has been applied for this postemergence control, but Palmer Amaranth has now developed resistance to glyphosate.

Dimethenamid-P, S-metolachlor, and other Group 15 herbicides

The Group 15 herbicides, such as dimethenamid-P, S-metolachlor, and acetochlor (chloroacetamide) all require application to sugar beet no earlier than the two true-leaf stage, since these herbicides will injury sugar beets if applied any earlier. This stage of crop growth can often take four to five weeks after planting to be reached, and in that period of time early emerged Palmer amaranth can easily reach four inches in height. Group 15 herbicides have no activity on emerged weeds, making these products ineffective alternatives. Although these

are applied after sugar beets are emerged and established, they will only control flushes of weed emergence that occur after these herbicides are applied.

Trifluralin (Treflan)

Trifluralin has a similar use pattern to Group 15 herbicides, it cannot be applied until sugar beets are 2-6 inches tall, to control later flushes of weed emergence that occurs after application. Any exposed beet roots must be covered with soil prior to application to reduce root girdling.

Clopyralid

Clopyralid has demonstrated minimal control of Amaranthus species and shown no control for Palmer Amaranth in Colorado fields.

Triflusulfuron-methyl (UPBEET)

This herbicide has poor activity on Palmer Amaranth and other Amaranthus species. Palmer Amaranth has also developed resistance to sulfonylureas.

Sodium Acifluorfen

Sodium Aciflourfen was granted a Section 18 exemption in 2021 for control of Palmer Amaranth. However, its application was restricted until the crop reached 8-10 true leaves, and growers experienced crop damage following applications. Data provided by Drs. Nevin Lawrence of the University of Nebraska and Andrew Kniss of the University of Wyoming, noted that acifluorfen control of Palmer amaranth averages less than 70% in Colorado, and Dr. Todd Gaines of Colorado State University believes this is due in part to the exceptionally low organic matter present in high plain soils found in Colorado. The Western Sugar Cooperative has stated Ultra Blazer is no longer considered a viable alternative herbicide for Palmer Amaranth.

B. IPM Weed Control Alternatives

The growers-owners of the Western Sugar Cooperative funded development of a holistic whole farm planning calculator by Weed Scientists at the University of Wyoming and the University of Nebraska-Lincoln. This application allows farmers to plan crop and chemical rotations to best optimize long-term weed management. Despite use of this tool, Palmer Amaranth has still emerged as a new pest. It may have arrived from southern and eastern areas already resistant to glyphosate, after widespread use in glyphosate-resistant soybean and cotton crops.

Cultural Weed Control

Crop rotation: There are still herbicides available in corn that will control Palmer Amaranth. However, sugar beets are highly sensitive to these corn herbicides so the required plant back restrictions for sugar beets prevents these being used in corn grown prior to sugar beets. Small grains are often included in rotation with sugar beets, and small grains can outcompete Palmer Amaranth due to establishment of these crops in the fall (winter wheat) or early spring (spring barley). However, small grains are harvested as early as July, and Palmer Amaranth can be difficult to manage later in the summer and fall. This would allow a heavy weed seed population to be established prior to planting of sugar beets the following spring.

Conservation tillage: Most Western Sugar growers use conservation tillage, including 50% of acres managed through strip tillage or no tillage. The resulting residues on the surface can serve as a physical barrier to weed establishment. Some growers also plant cover crops to compete with weeds when possible. However, despite these management practices, Palmer Amaranth has still become established.

Mechanical weed control: With the advent of glyphosate tolerance crops, in the past decade most Colorado sugar beet growers have adopted no-till or strip till technology. This has resulted in many beneficial effects on the environment, including improved soil health, less soil loss from erosion, reduced greenhouse gas emissions, lower fuel consumption and improved water use efficiency. Many farmers have gotten rid of their conventional tillage and plowing implements.

Hand-weeding: Prior to the availability of glyphosate over-the-top, hand labor was also used to control weeds growing in the rows. Cultivation of sugar beet must cease later in the season, since cultivation can damage the large beet growing underground. However, there is currently a national shortage in access to farm labor. This is exacerbated in Colorado's sugar beet growing area since most farms have not needed hand labor for weed control for over a decade, so few farm laborers are attracted to this area. At the same time, base wages have increased while farm income has been in decline. Finally, in 2021, the Colorado General Assembly passed the Agricultural Workers' Rights Act, which prohibits all hand labor completed by a short-handled hoe for weeding and thinning, and the "performance of weeding and thinning by hand or with a short-handled tool, other than a short-handled hoe, in a stooped, kneeling, or squatting position is strongly disfavored" unless under specific circumstances. (Senate Bill 21-087, Section 5)

Biological Weed Control: There are no available biological weed control products available for Palmer Amaranth.

V. Efficacy of Proposed Use Under Section 18

CDA was provided with four studies (attached, see appendices A-D) encompassing four years of research on metamitron field trials completed by Dr. Nevin Lawrence. Field trial sites included locations in western Nebraska and southern Wyoming, which share similar soil compositions and climate to the sugar beet production areas in Colorado. Lawrence's work demonstrates that acceptable control of Palmer was achievable using metamitron alone at any treatment level through the 4 true leaf stage (Appendix B). The proposed emergency use label follows an existing EU label's maximum use rate of 64 fl. oz./acre.

Applicators who used metamitron for the 2024 growing season reported positive results with 100% of permittees reporting reduced levels of Palmer amaranth in fields. Applicators reported efficacy ranged from "80% control" to multiple responses of "highly effective," including responses of "no palmer" in previously high pressure areas.

VI. Discussion of Expected Residues in Food

As of the date of this submission, there are no permanent established tolerances of metamitron for any food commodity in the US. ADAMA will be sending EPA relevant information regarding residue information. In 2023, following the authorization of metamitron under a specific exemption for the 2024 growing season, the Agency issued a time limited tolerance for metamitron in or on sugarbeet roots at 0.01 ppm.

VII. Discussion of Human Health and Environmental Risk Information

As of the date of this submission, CDA has not received any data from the registrant regarding human health or environmental risks. A Section 3 request for pome fruit thinning was submitted to the Agency prior to this request. The draft emergency use label for Goltix 700 SC contains a "Warning" signal word, with personal protective equipment requirements including long-sleeve shirt and long pants, socks, shoes, and waterproof or chemical- resistant gloves 14 mils or thicker. Mixers and loaders must wear coveralls in addition to the above listed PPE.

An IPaC query returned the following endangered species that may be impacted in the proposed treatment areas:

- Black Footed Ferret

No critical habitat was identified by IPaC. A copy of the draft label was submitted to Colorado Parks and Wildlife ("CPW") Endangered Species Conservation Coordinator for review. From review of that label, Colorado Parks and Wildlife stated it believes it is unlikely that any wildlife species would be impacted from the use of metamitron given the mechanical nature of sugar beet production.

VIII. Coordination with Other Affected Federal, State, and Local Agencies

CDA has worked closely with its neighboring state lead agency, Nebraska Department of Agriculture regarding this request. A copy of this request will be provided to the local Colorado Office of the U.S. Fish and Wildlife Service, Colorado Parks and Wildlife, and EPA Region 8. Notification of this submission will also be sent to Wyoming, Oregon, and Idaho, who are expected to submit sister requests for metamitron on sugarbeets.

IX. Notification of Registrant

Please refer to Appendix H.

X. Enforcement Program

The Colorado Pesticide Act, §§ 35-9-101-128, C.R.S. and the Rules promulgated thereunder (8 C.C.R. 1203-1) provide the necessary enforcement authority for violations of any of the conditions or restrictions of a section 18 exemption. Typically, each applicator of a section 18 product is required to obtain a permit from CDA prior to purchase or use of the product, and we require record-keeping and a final use report from each permittee. A reasonable number of these permittees are inspected to determine if they have complied with all record-keeping requirements.

XI. Repeat Uses

This is Colorado's third request for metamitron. In 2023, CDA received authorization for the 2024 growing season.

XII. Progress Toward Registration

ADAMA has indicated that a section 3 request for metamitron has been submitted to EPA as a growth regulator for apple and pear (EPA Docket #693119). ADAMA is in active discussions with EPA regarding a section 3 request for sugar beets. Please see Appendix H.

XIII. Information Required for a Specific Exemption

A. Name of Pest

Palmer amaranth (Amaranthus palmeri)

B. Discussion of the Events Which Brought the Emergency Condition

Palmer Amaranth arrived into Northeastern Colorado within the last 10 years. This species grows rapidly, can produce over 100,000 seeds per plant, survives well in no-till and minimum till conditions, and seeds can continue to germinate and emerge all season long. According to the grower representative, within four years, the presence of Palmer has evolved from non-existent to impacting over 66% of sugar beet acreage today in various degrees.

Additionally, the loss of other registered post-emergence herbicides in sugar beet following the widespread adoption of glyphosate-resistant sugar beet. For example, Betamix (Desmedipham plus phenmedipham) was previously available for control of various broadleaf weeds in sugar

beet, applied postemergence to both sugar beets and weeds, including Amaranthus (pigweed) species. The federal registration of Betamix Herbicide was canceled in 2014, and it was last registered for distribution in Colorado in 2019. Economic levels of weed control in sugar beets now relies heavily on the use of glyphosate.

Finally, the development of resistance to glyphosate in Palmer Amaranth has intensified this crisis. Glyphosate resistance was confirmed in Colorado Palmer Amaranth in 2016, with 10-20% of collected samples testing as resistant. When samples were collected from fields showing lack of control after glyphosate treatment, 100% of Palmer Amaranth tested were resistant.

C. Discussion of Anticipated Economic Loss

Data shown in the following tables was provided by the Vice-President for Science and Government Affairs for Western Sugar Growers Cooperative, Rebecca Larson, PhD. As a closed-grower owned cooperative, Western Sugar has detailed field-by-field records of sugar beet yields. This is used to determine payment back to growers after processing the harvested beets into sugar. Western sugar had their field staff work closely with farmers in Colorado to summarize sugar beet yields from fields without significant Palmer amaranth and those with Palmer amaranth pressure.

In her communication with CDA, Dr. Larson explained that sugar beet losses due to weed infestation is primarily a yield loss situation, rather than a quality loss in the sugar content of the beet root.

Yield data from 2022 and 2023 show a 30% reduction in gross revenue for fields experiencing Palmer amaranth pressure which meets the Tier 2 requirement.

Following the use of metamitron in the 2024 growing season, economic data from fields with the highest pressure reporting increased yields from 11 tons/acre to 32 tons/acre. At current sugar prices, this amounts to an increase of $1260 per acre in economic impact.

Table 1. Crop value and gross revenue in fields without palmer for the past 8 years (data provided by Western Sugar Cooperative)

Data from state of Colorado/Nebco WITHOUT Palmer amaranth pressure			
Year	Yield (Tons/Acre)	Price/Unit ($/Ton)[1]	Gross Revenue ($/Acre)
2024	32.00	$ 60.00	$ 1,920.00
2023	30.00	$ 41.00	$ 1,230.00
2022	30.00	$ 45.85	$ 1,375.50
2021	33.70	$ 46.00	$ 1,550.20
2020	31.30	$ 44.50	$ 1,392.85
2019	30.37	$ 42.46	$ 1,289.51
2018	32.39	$ 29.20	$ 945.79
2017	35.35	$ 31.60	$ 1,117.06
2016	33.66	$ 26.50	$ 891.99

Table 2. Crop value and gross revenue in fields with palmer for the past 8 years (data provided by Western Sugar Cooperative)

Data from state of Colorado/ NebCo WITH Palmer amaranth pressure				
Year	Yield (Tons/Acre)	Price/Unit ($/Ton)	Gross Revenue ($/Acre)	Gross revenue loss from Palmer ($/Acre)
2024	11.00	$ 60.00	$ 660.00	66%
2023	21.00	$ 41.00	$ 861.00	30%
2022	21.00	$ 45.85	$ 962.85	30%
2021	23.60	$ 46.00	$ 1,085.60	30%
2020	27.24	$ 44.50	$ 1,212.18	13%
2019	28.15	$ 42.46	$ 1,195.25	7%
2018	31.05	$ 29.20	$ 906.66	4%
2017	34.97	$ 31.60	$ 1,105.05	1%
2016	33.66	$ 26.50	$ 891.99	0%

Table 3. Net Revenue analysis for 2023 product years (data provided by Western Sugar Cooperative)

Net Revenue analysis			
	Without Palmer amaranth	With Palmer amaranth	% change
Net Revenue ($/acre)	**$ 107.86**	**$ (461.14)**	**-528%**
Gross revenue ($/acre)	$ 1,230.00	$ 861.00	**-30%**
Total Operating Costs ($/acre)[2]	$ 1,122.14	$ 1,322.14	
Herbicide/Weed management costs[3]	$ 62.54	$ 262.54	

Table 4. Net Revenue analysis for 2024 product years (data provided by Western Sugar Cooperative)

Net Revenue Analysis				
	Without Palmer amaranth	With Palmer amaranth	% change	With Palmer amaranth + metamitron
Net Revenue ($/acre)	**$ 1,920.00**	**($662.14)**	**-134%**	$ 1,920.00
Gross revenue ($/acre**)**	$ 797.86	$660.00	**-17%**	$ 670.32
Operating Costs ($/acre)[2]	$ 1,122,14	$ 1,322.14		$ 1,249.68
Herbicide/Weed management costs[3]	$ 62.54	$ 262.54		$ 127.54

[1] Price/Ton ($/Ton) is based on NASS data for all but 2021 and 2022 (numbers not available yet). 2021 $/ton data was provided by the cooperative based on year-end actuals reported into, but not out of NASS to date. The 2022 $/Ton data was provided by the cooperative based on mid-campaign projections.

[2] Operating Costs from 2021 Crop budget - South Platte Valley - Irrigated sugar beets (Colorado State University Extension), similar to costs of production ($/Acre) validated by USDA-FSA during WHIP+ calculations for 2018/2019 crops ($1,170 per acre). Operating Costs already include the herbicide/weed management costs.

[3] Typical herbicide costs are $62 per acre. Resistant Palmer increases the costs of weed management by $200 per acre using a conservative estimate. A worse case scenario would increase the cost of production up to $500/acre using every available tool to control Palmer.

D. Discussion of Anticipated Risks to Threatened and Endangered Species, Beneficial Organisms, or the Environment that would be remedied by the proposed use of the pesticide

With the advent of glyphosate tolerance crops, in the past decade most Colorado sugar beet growers have adopted no-till or strip till technology. This has resulted in many beneficial effects on the environment, including improved soil health, less soil loss from erosion, reduced greenhouse gas emissions, lower fuel consumption and improved water use efficiency. The lack of adequately available herbicides to control Palmer Amaranth may require growers to either stop producing sugar beets or increase the use of cultivation and tillage to control weed infestations in sugar beets. This would have a negative effect on soil health and soil conservation and would also increase greenhouse gas emissions.

XIV. Appendix List

A. Western Sugar Cooperative Research Committee Report for Research Funding

Evaluation of metamitron for sugar beet safety and weed control – 2019

B. Western Sugar Cooperative Research Committee Report for Research Funding

Evaluation of metamitron for sugar beet safety and weed control – 2019, 2020

C. Western Sugar Cooperative Research Committee Report for Research Funding

Evaluation of metamitron efficacy under different irrigation systems – 2020, 2021

D. Western Sugar Cooperative Research Committee Report for Research Funding

Evaluation of early season weed control potential of metamitron across diverse sugar beet production regions – 2022

E. Western Sugar Cooperative Research Committee Report for Research Funding

Evaluation of acifluorfen (Ultra Blazer) in sugar beet – 2021, 2022

F. Western Sugar Cooperative Formal Request Letter

G. Draft Section 18 Label

H. ADAMA Letter of Support

I. CDA Cover Letter