

RE: Information Inquiry for Cycloate Use on Beets (Sugar/Table) and Spinach

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To: Matt Enrico Baur <mebaur@ucanr.edu>; Douglass, Cameron - USDA-OCE, Washington, DC <Cameron.Douglass@usda.gov>

Cc: fournier@cals.arizona.edu <fournier@cals.arizona.edu>; Natalie Hein-Ferris <nheinferris@gmail.com>

Hi Cameron,

Sorry for the delay in getting this to you. Cycloate is an extremely important material for our sugar beet seed, spinach seed and beet seed industries, as well as the table beet industry. Please find responses to your questions written in red down below. These responses represent the Oregon (primarily Willamette Valley) and Washington (primarily Skagit Valley and Whatcom County) growing regions. I have another contact for additional soils/irrigation information, if needed, but couldn't get ahold of them before this weekend.

Best,
Dani

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From: "Douglass, Cameron - USDA-OCE, Washington, DC" <Cameron.Douglass@usda.gov>**Date:** Thursday, April 1, 2021 at 10:43 AM**To:** "dgg3@cornell.edu" <dgg3@cornell.edu>, "jess@msu.edu" <jess@msu.edu>, Matt Enrico Baur <mebaur@ucanr.edu>**Cc:** "Myers, Clayton - OCE, Washington, DC" <clayton.myers@usda.gov>, "Wechsler, Seth - OCE, Washington, DC" <seth.wechsler@usda.gov>**Subject:** Information Inquiry for Cycloate Use on Beets (Sugar/Table) and Spinach

Deb, Lynnae, and Matt,

I'm reaching out to see if you could help OPMP by distributing a request from EPA's Office of Pesticide Programs on current use patterns for the herbicide cycloate, which is currently only registered for use on beets and spinach. I've pasted EPA's full inquiry below (which includes an introduction). I realize that not all of these crops are grown in all of your regions – this especially pertains to the NE, where I believe only table beets are grown at scale – but I wanted to cast a wide net as this is such a niche herbicide.

Please let me know if you or any of your contacts have any questions, and thank you in advance for your help. I'd like to get responses back by April 23rd to give me time to synthesize the information and get it back to EPA before their deadline, but if any of your contacts need additional time just let me know.

Cameron

EPA OPP BEAD Inquiry on Cycloate Typical Use Information**Introduction**

Cycloate is an herbicide that is currently undergoing EPA's registration review process. The Biological and Economic Analysis (BEAD) team assigned to this pesticide is in the process of analyzing the use and benefits to support risk assessment and mitigation development, which will inform the cycloate Proposed Interim Decision (PID), currently scheduled for completion in June 2021. EPA has identified potential risks associated with the use of cycloate that include risks to drinking water where cycloate is

used on certain soil types. In addition, the Agency has identified potential occupational dermal and inhalation risks for mixer/loader/applicators who are exposed to cycloate impregnated fertilizer and to mixer/loader/applicators who are exposed to liquid formulations of cycloate via ground boom applications. Understanding typical use patterns associated with cycloate will help the Agency determine the reality of modeled exposure.

In that context, the team has developed a set of detailed use-site specific questions, provided below. The BEAD cycloate team is looking for specific information on current crop production practices to assist in the evaluation of usage, benefits, and risk management options. Information gathered through these questions will assist BEAD in conducting a benefits analysis. Cycloate is only registered for use on beets (sugar and table) and spinach.

BEAD is specifically looking for information on use of impregnated fertilizer in beet production and irrigation practices relative to cycloate applications in both beet and spinach production. BEAD is also interested in knowing how much cycloate impregnated fertilizer is typically applied by a single applicator in a day.

Please include in your response the production region or state for which your response pertains.

Questions for Sugar Beet Production – for seed

The usage data available to EPA on sugar beet production does not include data with regards to cycloate impregnated fertilizer that may be used in sugar beets. BEAD is interested in knowing if cycloate impregnated fertilizer is applied to sugar beets, rates at which cycloate is used, soil types and irrigation practices used in sugar beets, and typical amount of cycloate impregnated fertilizer applied by a single applicator in a day.

1. Is cycloate still an important chemistry in sugar beet production? Is it used via impregnated fertilizer? **Most of the industry is roundup ready, but this product will likely still play a role as roundup-resistant weeds continue to spread.**
2. If so, what application rates (lb a.i./acre) and number of applications are used for sugar beet? **Preplant incorporated, single application/year at labeled rates.**
3. How much sugar beet acreage is irrigated? On sugar beet acreage that is irrigated, how much water is added to the soil during the irrigation process and to what depth is the soil irrigated? (e.g. inches or acre feet of water, vertical depth that irrigated water penetrates in the soil for sugar beet production). **100% of the sugar beet for seed industry is irrigated. Sugar beet for seed production averages around 3000 acres in Oregon. It is common to apply up to 2" per week during summer; the depth is unknown.**
4. What soils types are typically observed in sugar beet **seed** production? Is cycloate commonly used on sandy soil types? **Silty clay loams on the west side of Oregon. Some eastern Oregon soils will be sandier soil.**
5. If cycloate is used, what weeds are targeted? What makes cycloate a useful control method? **Anything on the label, but especially nightshade, pigweed and annual grasses. Other targets may include smartweed and brassicas.**
6. What are alternatives to cycloate in sugar beet production? **No alternatives**
7. What is the typical field (acres) that a single applicator would treat with cycloate impregnated fertilizer in a day? **unknown**
8. How many pounds of cycloate impregnated fertilizer is typically applied by a single applicator in a day? **unknown**

Questions for Table Beet Production **fresh market and seed**

EPA does not have usage data on cycloate table beet production, but the following information will be helpful in evaluating the benefits of cycloate in this production practice:

1. Is cycloate used in table beet production? **RoNeet is used on 100% of conventionally produced fresh market table beet production in Oregon and Washington. RoNeet is used on 100% of the beet seed production in Oregon and Washington. In Washington, beet plants for seed are grown on Whidbey Island and vernalized, then taken back over to the mainland in year 2 and transplanted to produce the seed crop. Fields on Whidbey Island are treated with RoNeet, as well as the transplant field on the mainland prior to the transplanting.**
2. If so, which states and what are typical application rates? **1 application pre-plant at label rates**
3. What is the typical field (acres) that a single applicator would treat with cycloate in a day? **Field sizes in Oregon average 25-40 acres, but some may be up to 60 acres. The vast majority are less than 50 acres. In Washington, field sizes range from 5ac to 50acres. Some growers have contracts for multiple fields, with each field being 50acres or less.**
4. What soils types are typically used in table beet production? Is cycloate commonly used on sandy soil types? **In Oregon, on the west side – silty clay loam; may be sandy soil on the east side. In Washington, the majority are loam or clay loam, with organic matter varying from 2% to 12%. Fields can be variable, with those located near the river with a bit more sand content.**
5. How much table beet acreage is irrigated? On table beet acreage that is irrigated, how much water is added to the soil during the irrigation process and to what depth is the soil irrigated? (e.g. inches or acre feet of water, vertical depth that irrigated water penetrates in the soil for table beet production). **In Oregon, 100% of the production is irrigated. Yearly irrigation amount would total approximately 20". In Washington, there used to be no irrigation of beet seed crops, but as the climate has shifted, irrigation is becoming necessary – though not everyone has water rights. Current estimate is that perhaps 75% of the beet seed crop is irrigated, with the irrigated acreage on the rise. In Washington, growers use big gun irrigation for several irrigations – maybe 4 irrigations, but since the production practice is newer, there isn't a grower standard yet.**
6. What are the target weeds for cycloate? **Same as sugar beet.**

7. What are the alternatives to cycloate in table beet production? **No alternatives available.**

Questions for Spinach for seed, unless noted otherwise

Though EPA has cycloate usage data for spinach, this data is not delineated by the three different commodity types: fresh market clipped and bagged, fresh market bunched, and frozen. In particular, BEAD would like to know the soil types that may be important for each commodity type, the irrigation practices for each commodity type, and the amount of acreage that a single applicator would apply cycloate to in a day.

1. Is cycloate used in all spinach production (i.e. fresh market vs processed?) or is cycloate more important in a particular production practice? Why? **Yes, used in 100% all spinach seed production. Oregon has a fresh market spinach producer. Washington also has some baby leaf production in the Columbia basin, and juicing spinach is grown in Central Washington and Walla Walla.**
2. How much spinach acreage is irrigated? On spinach acreage that is irrigated, how much water is added to the soil during the irrigation process and to what depth is the soil irrigated? (e.g. inches or acre feet of water, vertical depth that irrigated water penetrates in the soil for spinach production). **In Oregon, 100% of the acreage is irrigated. Less irrigation is used than in beets. In Washington, there is an increasing reliance on irrigation, and approximately 75%+ of the acreage is irrigated. Irrigation is critical because the spinach is direct seeded.**
3. What soil types are typically used in spinach production? Is cycloate commonly used on sandy soil types? **Same as beets.**
4. What is the typical field (acres) that a single applicator would treat with cycloate in a day? **25-40 acres in Oregon. Washington – see the answer for beet seed.**
5. What are the main weed pests for which cycloate is used in spinach? **Same as sugar beet, plus shepherds purse and groundsel.**
6. What alternatives are there to cycloate in spinach? Do alternatives differ depending on soil type or intended market? **No other pre-plant herbicides for spinach. The type of spinach (seed, juicing, fresh market) doesn't matter.**

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