

February 1, 2019

North Coast Regional Water Quality Control Board
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

RE: 13267 Requests for Information about Lily Bulb Operations in Smith River Plain
File: Smith River Lily Bulb Operations

1. Description of Agricultural Practices

- ***Maps of lily bulb fields***

Maps of lily bulb operations in the Smith River Plain showing waterbodies/streams/drainage courses and, where possible, the direction of drainage off fields have been developed by NRCS.

- ***Field rotations***

Easter lily Bulb production requires both intensive and extensive rotational management. Currently approximately 15-1600 acres (use acres north of the Smith River) are managed in a grass-clover/Easter lily crop rotation. In a single year, approximately 375 acres are planted to Easter lilies. Briefly, the typical rotation begins in spring and is in some stage of preparation until planting begins in August. Preparation includes tillage of established pasture, application of lime, soil fumigation, and hilling before final planting is completed by the end of late fall. Bulbs remain in the ground for a minimum of 11 months and up to 14 months prior to the following harvest. Harvest typically begins in August and finishes by November but may extend into late November and early December depending on weather conditions. After harvest, fields are planted to a mixture of grass and clover. Over the next 2 to 3 years the fields are managed for forage.

- ***Timing of planting/harvest/field preparations and seasonal activities***

Attachment A

- ***Pests that affect Easter lilies and how they are controlled. Individual products and timing is propriety information. Each farm uses a different program.***

Botrytis attacks the plant leaves and stem during cool moist periods. Preventative foliar fungicide applications are made from emergence until harvest.

Aphids well timed applications of foliar insecticides are the current standard for controlling aphids. Applications begin in the spring and last until harvest, they are repeated based on interval and scouting.

Gophers trapping or baiting

Pythium, Rhizoctonia, Fusarium fumigation aids in controlling these fungi but the main control is dipping the bulbs in a mixture of pre-plant fungicide designed to control these fungi. Also typically a fungicide is applied in furrow at planting.

Nematodes fumigation is the main tool used to control nematode populations in the soil. A combination of nematicides is also applied at planting to control nematodes.

Weeds are typically controlled by timed applications of post and pre-emergent herbicide during the winter and spring, then left to be mechanically or manually controlled during the summer until the bulbs are harvested in the fall.

- ***Fertilizer***

Planting Application-This is usually a low N, high P and K fertilizer banded below and above the bulbs during the sowing process. Rates range from 600-1500 lbs. per acre.

Spring Application-Spring Calcium Nitrate applications are made in 3-4 week intervals, approximately. Rates can range from 100-250 lbs. per acre per application. Somewhere between 2 and 5 applications per season are applied.

- ***Manure applications***

Manure is applied through grazing cattle management on pasture. Mechanical applications are farm specific according to on farm Nutrient Management Plans.

- ***Irrigation methods***

Aluminum pipe with Rain Bird sprinklers are used during the drier months (typically May through October). Irrigation can vary from 10-28 days and set times can vary from 4-9 hours (monitored) to avoid run off and flooding. Some growers dig soil samples from target depths and use the feel and appearance method while other growers' use that combined with tensiometers or soil sensors.

- ***Types of BMPs to minimize and manage drainage and storm water runoff***

1. Minimize run-on onto lily bulb fields.
2. Divert run-off from lily bulb fields to established pasture and/or on-farm ditches when available.
3. Use water bars to spread water from rain inundated roads or heavily flooded fields to redirect water to preferred locations.
4. Shape fields to drain in two directions if appropriate and applicable, given each individual field.
5. Buffer or filter strips at field headlands.
6. Orientating row direction to minimize slope.
7. Keep storm water in lily field on headland if possible.
8. Reduce planting area in field.

- ***Existing conditions of riparian areas***

The general descriptions of riparian conditions in the Smith River basin are primarily willow, alder, cottonwood, and conifer. Non Native, invasive species such as blackberry, reed canary grass and iris are also present. Grasses include ryegrass, orchard grass, clover, velvet grass and barnyard grass. Himalayan blackberry has colonized where riparian vegetation is lacking. Most ditches and waterways are vegetated. Vegetated areas can range between 25 ft. to 150 feet depending on labels and conditions. Refer to *Smith River Plain Stream Restoration Plan, Del Norte County, California*.

- ***BMPs used to protect riparian areas***
 1. Monitor irrigation to minimize tail water runoff
 2. Continue to work with NRCS, the Del Norte RCD and the Smith River Alliance to develop and implement riparian plans with goals of enhancing water filtration, sediment capture and habitat for beneficial insect and wildlife.
 3. Buffer and filter strips.
 4. Field selections for rotation benefits.
 5. Consider row direction, row length and slope prior to planting.

2. Assessment of Risk to Water Quality

To be completed by NCQWCB

3. Description of Current and Planned Water Quality Management Practices

- ***Drainage and Erosion Control***

1. Design buffers and filter strips to slow water to allow for recharge to groundwater and filter through the soil and capture sediment.
2. Maintain and upgrade roads to minimize erosion and discharge of sediment to waterbodies.
3. Planting cover crops.
4. Field rotations-field selection.
5. Field berms.
6. Planting riparian vegetation to banks.

- ***Pesticide Management***

1. Time pesticide applications to avoid coincidence with wet weather, to reduce runoff.
2. Implement irrigation practices that eliminate or minimize irrigation runoff.
3. Implement pesticide application practices that eliminate or minimize pesticide drift or runoff, such as monitoring wind speed, label requirements, and maintaining spray buffers.
4. Work with NRCS, RCD and partners to implement buffers when necessary to reduce pesticide losses (USDA NRCS 3/2000) and seek funding for BMP's trials for project success.

5. Experiment with biological control and cover crops that create beneficial insect habitat.
6. Pesticide storage compliance through Del Norte Department of Agriculture and the Del Norte Health Department.

- ***Riparian Management***

1. Maintain stream setbacks that enhance riparian functions such as filtering runoff.
2. Buffer/Filter Strips determined by existing vegetation and location
3. Vegetation plantings.
4. Restore degraded riparian areas, where possible.

- ***Nutrient Management***

1. Manure applications applied within guidelines of dairy nutrient management plan.
2. Nutrients are applied to meet crop needs based on research findings from the Easter Lily Research Foundation, in cooperation with Oregon State University, and personal experience.
3. Fertilizer is applied and managed to maximize efficiency use with regard to irrigation and storm events.
4. Irrigation water managed for timing, placement, and quantity of water delivered during each irrigation event (events based on soil moisture needs to recharge root zone and minimize run off, manage nozzle size to target water placement and maximize infiltration).

- ***Special Projects***

The Easter lily producers are working with the Del Norte NRCS, Xerces Society, the Del Norte RCD, the Smith River Alliance and the East Stanislaus RCD on three riparian restoration planning projects, soil health, and two beneficial insect habitat hedgerows on four of the Smith River tributaries.

Producers assisted the Del Norte RCD and the Smith River Alliance with landowner access and input to develop the *Smith River Plain Stream Restoration Plan, Del Norte County, California*.

4. Monitoring and Reporting

Information submitted by lily bulb growers will be used to develop a process for monitoring and reporting.

5. Attachment A is a topographical map of runoff direction of fields in the Smith River plains.
6. Attachment B is a rough summary of cultural practices that are employed in lily bulb farming.

Respectfully Submitted by,

[REDACTED]
Hastings Bulb Growers, Inc. and Smith River Farms, Inc.

[REDACTED]
[REDACTED]

[REDACTED]
Dahlstrom & Watt Bulb Farm, Inc.

[REDACTED]
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Palmer Westbrook, Inc.

[REDACTED]
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[REDACTED]
United Lily Growers, Inc.

[REDACTED]
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Del Norte County Easter Lily Bulb Growers Map for Drainage Directions




Date: 1/31/2019

Agency: USDA-NRCS

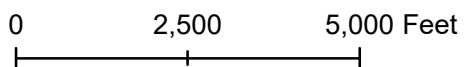
Field Office: DEL NORTE LPO
District: DEL NORTE RCD



Legend

-  Runoff Flow
-  Fields
-  Creek

Prepared with assistance from USDA-Natural Resources Conservation Service



1:33,500

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Ortho Imagery Date: 2016

