

● ALTERNATIVES

# CORN GLUTEN MEAL — A NATURAL LAWN CARE HERBICIDE

By CAROLINE COX

“Weed and feed” herbicide products get used on lawns in staggering amounts. For example, the U.S. Environmental Protection Agency (EPA) recently estimated that over 5 million pounds of the common herbicide 2,4-D are applied to lawns in these kinds of products every year.<sup>1</sup> Because of the health and environmental hazards associated with use of these herbicides, a “natural” weed and feed product is an attractive idea to many people. A product called corn gluten meal fits this description.

## What Is Corn Gluten Meal?

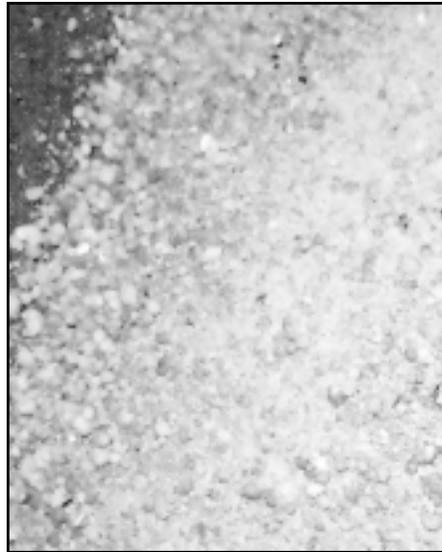
Corn gluten meal is a by-product of processing corn to make corn starch and corn syrup. It is generally sold as a golden yellow meal or as light brown granules. In addition to its use as an herbicide, it is used as food for cows, cats, dogs, fish, and poultry.<sup>2</sup>

Corn gluten meal is about 10 percent nitrogen so it’s a good natural fertilizer.<sup>3</sup>

## How Does Corn Gluten Meal Work as an Herbicide?

Corn gluten meal prevents sprouting seeds from developing normal roots. This does not directly kill the seedlings, but makes them susceptible to dehydration if the soil gets dry. Established plants are not affected.<sup>2</sup>

The developing roots of a number of common weeds are affected by corn gluten meal: crabgrass, creeping bentgrass, smart weed, dandelions, redroot bigweed, purslane, lambsquarter, foxtail, barnyard grass, and Bermuda grass. Crabgrass is the most common target of corn gluten meal products.<sup>2</sup>



## Is Corn Gluten Meal an Effective Herbicide?

Corn gluten meal was developed as an herbicide by Iowa State University horticulturist Nick Christians. Christians discovered corn gluten meal’s herbicidal activity accidentally, while using corn gluten meal in a study of a fungus on a golf course.<sup>3</sup>

Christians followed up his discovery by studying how well corn gluten meal reduced the establishment of crabgrass in Kentucky bluegrass turf. He found that applications of 20 pounds of corn gluten meal per 1000 square feet of turf reduced crabgrass by about 60 percent.<sup>3</sup>

Christians also did a greenhouse study that looked at the effect of corn gluten meal on 22 different weeds. The most susceptible weeds were black nightshade, lambsquarters, creeping bentgrass, curly dock, purslane, and redroot pigweed.<sup>4</sup> Corn gluten reduced root development and survival of all 22 species tested.<sup>4</sup>

## Status as a Pesticide

Corn gluten meal has been classified

by EPA as a “minimum risk pesticide” that is exempt from registration requirements. This means that corn gluten meal products can be sold without going through EPA’s registration process.<sup>5</sup> EPA also has registered one corn gluten meal product as a biological pesticide.<sup>2</sup>

## Effective Use

Corn gluten meal is typically applied to lawns with a spreader.<sup>2</sup> Most corn gluten meal products suggest that between 12 and 20 pounds of corn gluten meal be applied per 1000 square feet of lawn. Typical products also recommend two applications per year, the first one in the spring and a second one in the fall.<sup>6</sup>

To successfully kill weeds with corn gluten meal, timing is crucial. Remember that corn gluten meal needs to be applied when weed seeds are sprouting. Corn gluten meal suppliers recommend timing spring application when “forsythia begins to bloom,”<sup>7</sup> or “two weeks before the first crocus, early daffodils, and blooming tulips”<sup>8</sup> because these flowers bloom at the same time that some common weeds germinate. In the coastal Pacific North-



U.S. Geological Survey

Corn gluten meal can be applied with an ordinary spreader.

Caroline Cox is JPR’s editor.

west, March 15 is suggested.<sup>9</sup>

In the fall, corn gluten meal suppliers suggest that you apply the product “following the hot, dry stress period of mid-summer,”<sup>10</sup> usually “some time between mid-August and mid-September.”<sup>11</sup> In the coastal Pacific Northwest, August 15 is suggested.<sup>9</sup>

For corn gluten meal to be effective, “a drying period is required”<sup>3</sup> after the product is applied.<sup>3</sup> This kills the weed with roots that have been damaged by corn gluten meal. Many suppliers also recommend watering in the corn gluten meal before drying out the soil. This means that following application you “irrigate the area and then allow for a short drying period.”<sup>12</sup> Clearly, the climate in some areas (such as the western parts of Oregon and Washington) make this a challenging requirement.

### Potential Health and Environmental Problems

Canada’s Pest Management Regulatory Agency has identified a potential health problem associated with corn gluten meal.<sup>13</sup> Corn and corn by-products are known to cause allergies for some people. A few people have serious reactions, including respiratory problems and hypersensitivity.<sup>13,14</sup> If you know that you or your family members are allergic to corn, NCAP recommends that you avoid exposure to corn gluten meal.

Since corn gluten meal is used as food for mammals, birds, and fish, EPA does not expect it to cause adverse effects for these animals.<sup>2</sup>

### Other Uses

In addition to lawns, corn gluten meal suppliers recommend using it for gardens, flower beds, roses, and shrub beds.<sup>15</sup> For these uses, it is typically raked lightly into the soil.<sup>16</sup> Water lightly after application, then allow to dry for several days.<sup>15</sup>

### Inert Ingredients

EPA requires that minimum risk pesticides be labeled with the names of all the ingredients used in the product. This includes the “inert” (typically unidentified) ingredients.<sup>18</sup> Many corn gluten meal products do not contain



A lawn managed with corn gluten meal.

any “inert” ingredients.<sup>9,11,17</sup> Others contain bone meal, molasses, soybean hulls,<sup>7</sup> soybean oil,<sup>12</sup> or corn oil as “inerts.”

### Corn Gluten Meal Suppliers

Iowa State University maintains a list of companies that sell corn gluten meal. The list is available at [http://www.techtransfer.iastate.edu/en/for\\_industry/technology\\_search/cgm\\_licensees.cfm](http://www.techtransfer.iastate.edu/en/for_industry/technology_search/cgm_licensees.cfm).<sup>19</sup>

### A Healthy Lawn

Good lawn care prevents most pest and weed problems from occurring, so that treatments are not required. EPA recommends that you create a healthy lawn with these steps:

- Build healthy soil.
- Choose grass varieties that do well in your area.
- Mow high and mow often.
- Water deeply and not too often.
- Remove thatch as necessary.
- Be realistic about your lawn. Perfection is not necessary.

If you use corn gluten meal, NCAP recommends that its use be combined with these healthy lawn care practices.

### Conclusion

Writing about corn gluten meal, University of Idaho weed scientist Don Morishita stated that “anybody who is looking for an alternative to synthetic herbicides should try it.” Many who have used it share his opinions. If you

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feel that your lawn could use “weed and feed,” give corn gluten meal a try and see if it helps with weed problems. ♣

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