

Operation Pollinator:

Positive Action for Pollinators



Operation Pollinator
Multifunctional Landscapes

syngenta®

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What is Operation Pollinator?

Operation Pollinator, developed by Syngenta, provides golf course managers the tools and information to successfully establish and manage attractive wildflower resources that are crucial for bumblebees and pollinating insects, while enhancing the visual appearance of the course and the overall playing experience.

How can golf courses help pollinators?

The vast landscapes of golf courses give them an ideal opportunity to preserve and enhance the essential habitat of pollinators to help prevent further decline.

- In 1970, there were about 4 million honey bee colonies in the U.S. In 2012, there were approximately 2.5 million colonies, according to a national survey.¹
- Bees' geographic ranges have diminished by 23 to 87 percent.²
- Almost one-third of our global food supply depends on insect pollinators to help pollinate flowering plants, including more than 100 North American crop species.

With guidance from Syngenta, golf courses involved with Operation Pollinator can extend their environmental stewardship to make a positive impact on the environment. Golf courses around the country are well-placed to establish and preserve habitats to help prevent further pollinator decline. Establishing an Operation Pollinator habitat can have positive benefits for multiple stakeholders including pollinators, superintendents, players, the golf course and the community.

¹Spleen, Angela M., Lengerich, Eugene J., Rennick, K., Caron, D., Rose, R., Pettis, Jeff S., Henson, M., Wilkes, James T., Wilson, M., Stitzinger, J., Lee, K., Andree, M., Snyder, R. vanEngelsdorp, D. Journal of Apicultural Research (2013).
²"A national survey of managed honey bee 2011-2012 winter colony losses in the United States: results from the Bee Informed Partnership." Web.

²Cameron, Sydney A., Lozier, Jeffrey D., Strange, James P., Koch, Jonathan B., Cordes, Nils, Solter, Leellen F., Griswold, Terry L. PNAS Early Edition (2010).
"Patterns of widespread decline in North American bumble bees." Web.

Benefiting pollinators through research-based results

- Over 10 years of research on benefits of site establishment
- Initially launched in Europe and established in the U.S. in 2011
- Over 16 countries engaged
- Research performed by University of Kentucky A.J. Powell, Jr. Turfgrass Research Center



Bring your course to life

Operation Pollinator can also lead to positive interactions between golf courses and their communities. Building awareness of environmental stewardship efforts can promote the course in a positive light and create customer loyalty.

Developing an Operation Pollinator habitat can:

- Play a key role in reviving native bees and other pollinating insects
- Introduce native wildflowers to your course for pollinators
- Attract organizations and players interested in sustainable efforts
- Generate pride for your course and the community
- Enhance visual appearance of the course and overall golfing experience when full establishment is achieved
- Create positive publicity for the club



Where do I begin?

Syngenta will provide your course the expertise to establish new Operation Pollinator habitats including guidelines for:

- Site selection
- Sourcing a custom wildflower seed mixture
- Establishment techniques
- Management options

Initial results can be seen within three to six months after establishment of an Operation Pollinator site. Within 12 to 18 months, wildflowers and vegetation will be fully established, adding beauty to your course. Any golf course can create an Operation Pollinator site and maintain it with minimal labor.

Here are tips to help your course get started:

Walt Osborne, Key Account Manager, Syngenta, evaluates an Operation Pollinator site.



- Golf course managers/superintendents are encouraged to transform as much space as the course can offer for an Operation Pollinator site without interrupting golfers' play. Sites can range in size from a few thousand square feet to several acres.
- Work with the head golf professional to ensure they are comfortable with the site's out-of-play location.
- Create accessible sites for community groups, such as schools, to view the habitats.
- Start with a burndown application in the fall to ensure a clean plot for seeding.
- It is recommended to use on-site irrigation, but is not required.
- Select the proper wildflower variety for your course by working with Syngenta experts.
- Promote awareness by placing program signage near sites to introduce players to Operation Pollinator. It is recommended to include information about the plots in your pro shop or golf carts.



Ideal locations for establishing an Operation Pollinator habitat



Wildflower selection

Applewood Seed Company in Arvada, Colo. supplies custom wildflower mixes for Operation Pollinator sites. Wildflower mixes are selected based on the course geography and climate, and multiple mixes can be used to help ensure flowering during different seasons. The summer-flowering mixes can attract up to 40 different bee species during a season.

Please contact Diane Wilson with Applewood Seed Company at (303) 431-7333 or DWilson@applewoodseed.com to learn more about what may be best for your course.



Bee Feed Mix



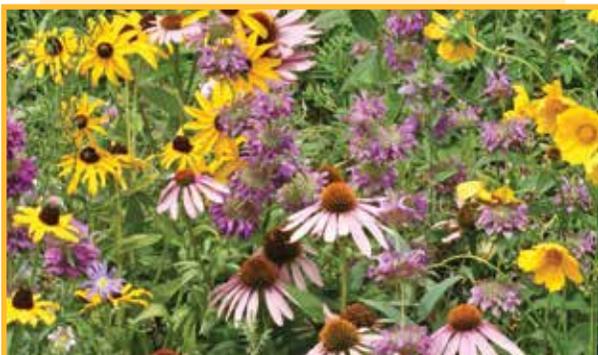
Honey Bee on Corn Poppy



Butterfly on Dwarf Godetia



Western Pollinator Mix



Eastern Pollinator Mix



Honey Bee Mix



Customer Story

Marriott Golf is a leader in establishing Operation Pollinator sites around their resort golf courses to maximize their sustainable efforts. “I would recommend any course get involved with Operation Pollinator,” says David Robinson, Senior Director of Golf Grounds for Marriott International. “Anything we can do to promote the environment works well with our overall sustainability initiative. Operation Pollinator is an easy process to begin and is an extension of the environmental efforts our superintendents implement every day.”

“Operation Pollinator really sets Syngenta apart; Syngenta has become one of our closest relationships over the years because of their ability to think outside the box. Their programs, for the most part, assist us in tracking our chemical input, and that says a lot about a company that is willing to go above and beyond for what is right for the industry and environment.”



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