



We create chemistry

## MOVING FORWARD WITH FARMING – THE BIGGEST JOB ON EARTH

### Let's move forward together

While farming is the biggest job on earth, farmers are not facing the challenge alone. We support productive, sustainable agriculture, allowing farmers to protect the land they hold in trust for future generations while meeting the demands of modern society.

We pledge to:

- Invest in the right solutions to enable farmers to grow more quality food, more efficiently.
- Share our expertise to help farmers to make a better life for themselves and their communities.
- Never compromise on safety to allow farmers work in a safe environment and produce safe, healthy food.

In everything we do, we will play our part in leaving a positive environmental inheritance.

We stand shoulder to shoulder with farmers. Together, we will move forward on our journey.

### The Monarch Butterfly Research Project

Acting responsibly toward society and the environment is imperative in today's world. Not only is it the right thing to do, it is a critical factor for long-term business success. BASF develops practices that enable farmers to be profitable and achieve high yields while caring for the environment. These are not mutually exclusive objectives – in fact, they go hand-in-hand.

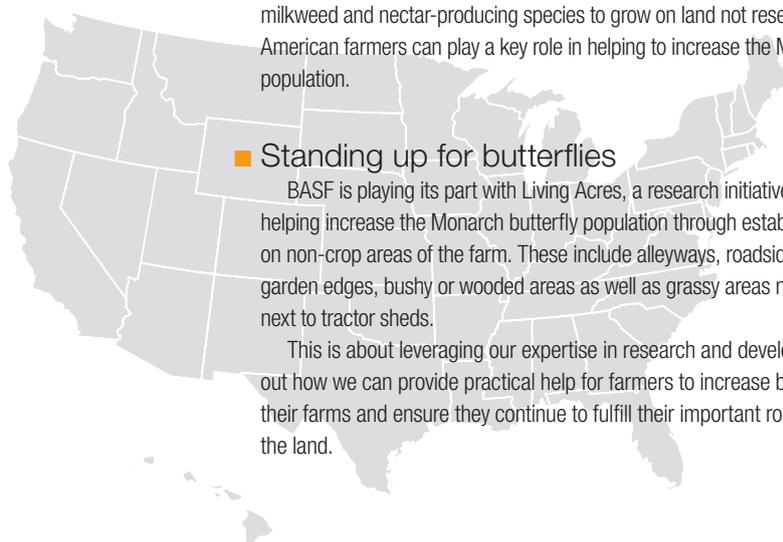
#### ■ Sustaining the Monarchs

Take the case of Monarch butterfly populations, which have been declining in the United States since the late 1990s. One of the many factors thought to be contributing to this decline is the loss of milkweed plants growing on farmland. Milkweed is a critical component in the Monarchs' reproduction cycle. By allowing milkweed and nectar-producing species to grow on land not reserved for crops, American farmers can play a key role in helping to increase the Monarch butterfly population.

#### ■ Standing up for butterflies

BASF is playing its part with Living Acres, a research initiative focused on helping increase the Monarch butterfly population through establishing milkweed on non-crop areas of the farm. These include alleyways, roadsides, ditches, garden edges, bushy or wooded areas as well as grassy areas near grain bins or next to tractor sheds.

This is about leveraging our expertise in research and development to find out how we can provide practical help for farmers to increase biodiversity on their farms and ensure they continue to fulfill their important role as stewards of the land.



■ Living Acres

The research, conducted on the BASF Research Farm in Holly Springs, North Carolina, provides best practices for establishing and maintaining milkweed plants on non-productive areas. Our goals are to:

- Better understand how to successfully establish milkweed in non-crop areas of farms
- Determine how Monarch habitat refuges can coexist with high-yield production agriculture
- Evaluate the success rate of milkweed seeds versus native rootstock or seedlings
- Determine the ideal milkweed planting time (spring versus fall/autumn)



■ The life of the Monarch

The majority of Monarchs fly north from central Mexico in spring and summer, landing in central and eastern parts of the United States and southern Canada. During this migration, adult female Monarchs lay eggs only on milkweed plants. When the eggs hatch, the resulting larvae feed on milkweed leaves. Major stretches of farmland lie within the Monarchs' migration path.



■ Discovering and sharing best practice

The important message to farmers is that they can grow areas of milkweed and help increase Monarch butterfly populations without any impact to their agricultural productivity or farming operations. Our initial research shows that creating milkweed refuges takes an upfront investment of time, but once established they should support themselves year after year with minimal effort.

We will use the findings of this research to encourage and support farmers to join the movement to increase biodiversity on their farm, help increase the Monarch butterfly population and keep agriculture productive for generations to come. Additionally, we want to give farmers the confidence that milkweed can be reintroduced into non-crop areas without it becoming a burden on productivity. Through science and innovation, we are enabling farmers to meet the needs of society – now and into the future. Together, we can make a difference and contribute to supporting the Monarch butterfly.

“Sustainability and biodiversity are two important areas of focus for BASF. Living Acres puts years of research and development experience to work to find a way for biodiversity to exist alongside modern agriculture.”

■ The Importance of Butterflies

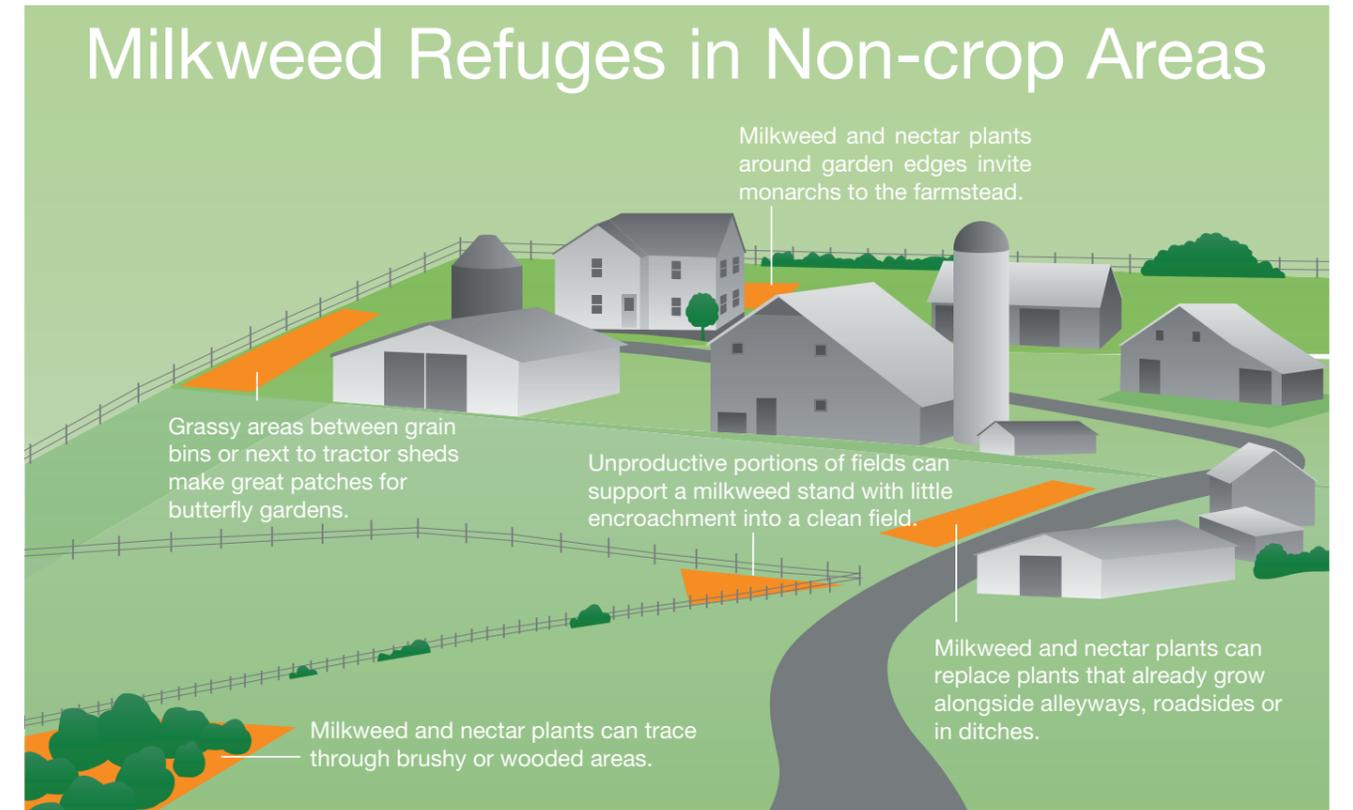
- Butterflies are part of a healthy environment. Areas rich in butterflies and moths are rich in other invertebrates, which collectively provide a wide range of environmental benefits, including pollination and natural pest control.
- Butterflies support a range of other predators and parasites, many of which are specific to individual species, or groups of species.
- Butterflies have been widely used by ecologists as model organisms to study the impact of habitat loss, fragmentation, and climate change.
- The butterfly's life-cycle teaches children about the natural world. The transformation from egg to caterpillar to chrysalis is considered one of the wonders of nature.



■ Where to plant milkweed

Farms are full of non-crop areas that can be put to use to increase biodiversity. By planting milkweed and other nectar plants in non-crop areas of farms,

farmers can support biodiversity and a flourishing Monarch butterfly population alongside high-production agriculture.



■ Personal commitment

Everyone wins. After all, productive agriculture needs a healthy environment while research and education helps everyone better understand farming's role in the ecosystem. Meanwhile, BASF's employees in the United States have made their own personal commitment to biodiversity by planting and tending Monarch butterfly-friendly gardens at our research and manufacturing facilities.

■ Tips for success – 7 steps of milkweed

1. Seed/root ✓
2. Pot ✓
3. Plant ✓
4. Spread ✓
5. Water ✓
6. Grow ✓
7. Mow ✓



Milkweed seedlings



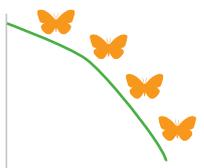
Planting milkweed on the BASF Research Farm in Holly Springs, North Carolina

# Did you know ...?

Monarch butterfly populations have plummeted

## 90 percent

in the last twenty years.



The Monarch is the only butterfly known to make a two-way migration, similar to birds.

## Millions

of newly hatched Monarch butterflies, who have never been to their ancestral breeding grounds, return to the very trees that their parents roosted in before they were born.



Monarchs can produce

## four generations

during one summer.

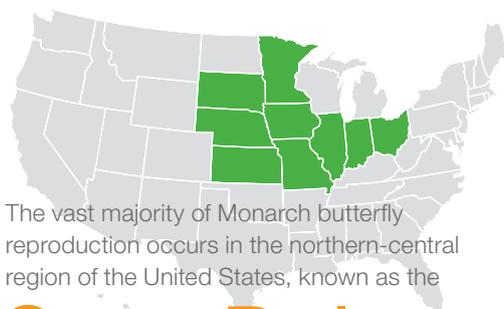
Monarch butterflies are known for the incredible mass migration that brings millions of them to California and Mexico each winter, a journey of up to

## 3,000 miles.



Monarchs can travel between **50 to 100 miles** a day, flying at speeds ranging between

## 12 to 25 miles an hour.



The vast majority of Monarch butterfly reproduction occurs in the northern-central region of the United States, known as the

## Corn Belt.



## Over 100 species

of milkweed have been identified as native to the United States and Canada.

### CONTACTS

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