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Drivers For Innovation in Protecting and Improving Sugarbeet Crops in the U.S.

American Society of Sugar Beet Technologists
Long Beach, CA
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American Sugarbeet Growers Association

- Unites sugarbeet growers in the United States and promotes the common interest of state and regional beet grower associations
- Legislative, administrative, international trade, science and innovation, legal and public relations
- Works with US Beet Sugar Association (representing beet sugar companies and cooperatives), Beet Sugar Development Foundation, and American Sugar Alliance (representing Beet and Cane sugar)

U.S. BEET SUGAR ASSOCIATION

BEET SUGAR DEVELOPMENT FOUNDATION

AMERICAN SUGAR ALLIANCE

American Sugarbeet Growers Association

What we do for sugarbeet production

- Shape political and regulatory environments to promote access to new and existing tools
- Defend safe and sustainable use of existing tools
- Advocate for rational and supportive regulatory systems that enable new technologies
- Promote federal research and technology development that support our goals
- Support research groups and grower-driven prioritization of research
- Identify new and emerging technologies in Ag for leveraging into sugarbeets

Drivers for Innovation in Sugarbeet Production

Because we must

Because we can

Imperatives for Innovation

Shifting Regulatory, Political, Legal Landscape

Environmental regulations (Federal, State, local)

Law Courts

Sustainability

Pollinators

Influence from Europe

Consumer pressure

Changing Biology and Ecology

Human population – feed more using less resources

Resistance evolution

Climate change

Invasive species

Emerging pests

Recent Defensive Activities

Neonicotinoids

Seed treatments

Dicamba

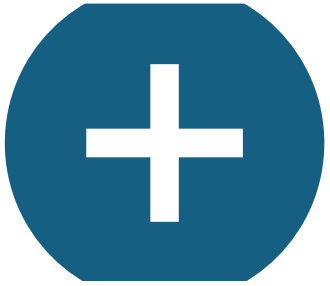
Chlorpyrifos

Thiram

Elatus

Mancozeb

Endangered species mitigations



Etc.

Endangered Species

Endangered Species Act (ESA) requires federal agencies to ensure that actions taken or permitted by the federal government will not jeopardize the continued existence of a listed species or result in adverse modification of its designated critical habitat.

EPA has been subject to several lawsuits claiming that the Agency has failed to meet its ESA obligations.

Recent EPA actions agreed with courts and plaintiffs

Vulnerable Species Pilot Program	Herbicide Strategy (Final)	Insecticide Strategy (Draft)	Nationwide mitigations	PULA mitigations

EPA's spray drift buffers

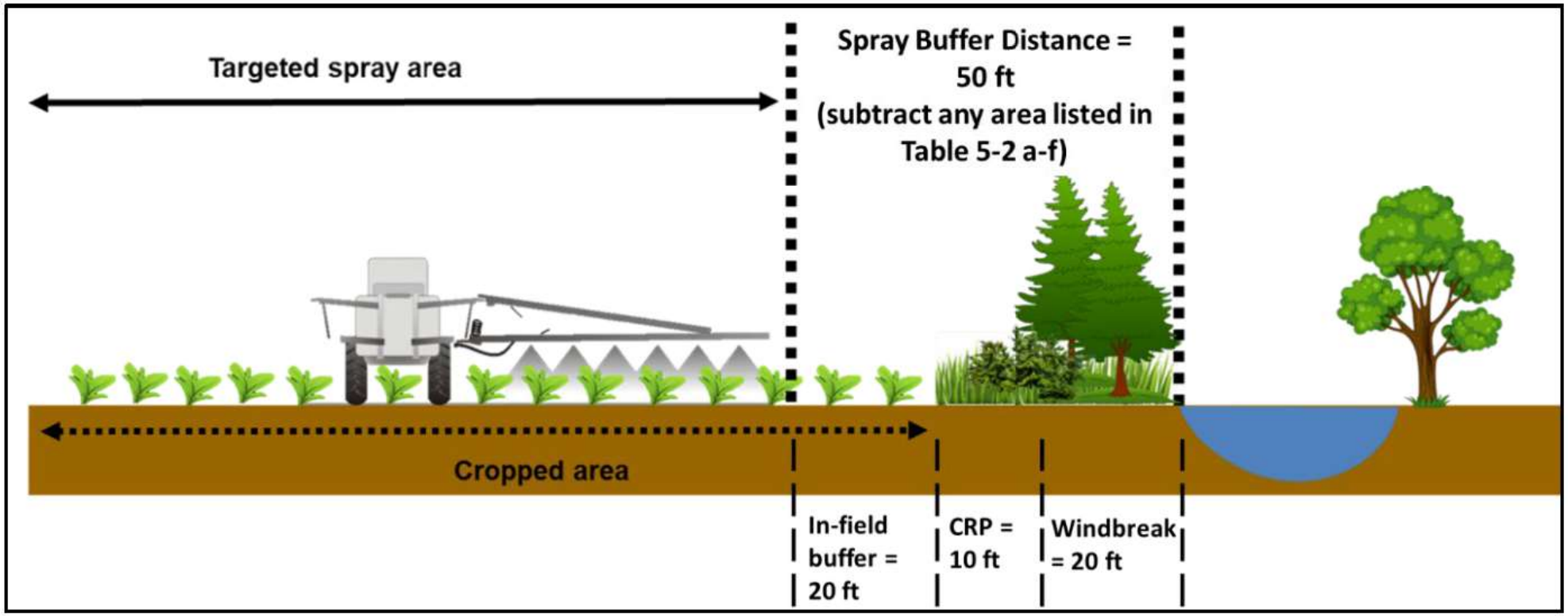


Figure 6. Diagram of the field (cropped area) with a downwind spray drift buffer[27] which includes a portion of the cropped area because the adjacent managed areas are less than the identified spray drift buffer distance.

EPA's Run-off and Erosion Mitigation Calculator

Systems that Capture Runoff and Discharge		
Category	**Select Value**	**Number of points**
Systems that Capture Runoff and Discharge (water retention pond, sediment control basin, irrigation tailwater return system, perimeter berm system (present at the time of application and throughout the cropping season), subsurface or tile drainage with a controlled outlet or without a controlled	make selection	0

Pesticide Runoff Vulnerability		
Select State	**Select County**	**Number of points**
make selection	make selection	Select state then county from dropdown menus to the left

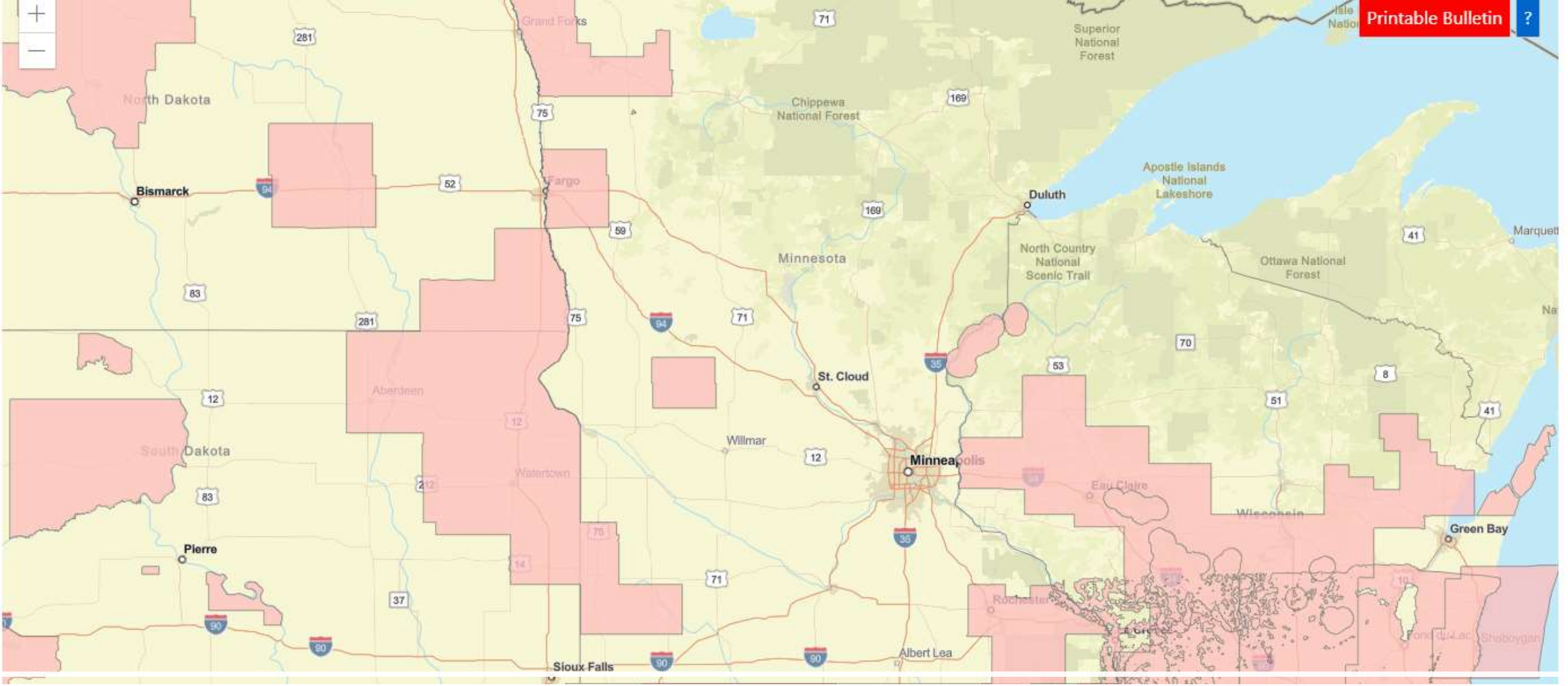
Conservation Program and Runoff/Erosion Specialists/Mitigation Tracking		
Category	**Select Value**	**Number of points**
Mitigation Tracking	make selection	0
Follow Recommendations from a Runoff/Erosion Specialist or Participate in a Qualifying Conservation Program	make selection	0

Field Characteristics		
Category	**Select Value**	**Number of points**
Field with Slope <3% (naturally low slope or flat fields; flat laser leveled fields)	make selection	0
Predominantly Sandy Soils (fields with sand, loamy sand, or sandy loam soil without a restrictive layer that impedes the movement of water through the soil - e.g., "hard pan"). This option can only be used if the product label does not prohibit application on sandy soils.	make selection	0

In-Field Mitigation Measures		
Category	**Select Value**	**Number of points**
Conservation Tillage (no-till, perennial crop (e.g., orchards that are not tilled), reduced tillage, strip tillage, ridge tillage, mulch tillage)	make selection	0
Reservoir Tillage (reservoir tillage, furrow diking, basin tillage)	make selection	0
Contour Farming (contour farming, contour tillage, contour orchard and perennial crops)	make selection	0
Vegetative Strips – In-Field (inter-row vegetated strips, strip cropping or intercropping, alley cropping, prairie strips, contour buffer strips, contour strip cropping, vegetative barrier (occurring in a contoured field))	make selection	0
Terrace Farming (terrace farming, terracing, field terracing)	make selection	0
Cover Crop or Continuous Ground Cover (cover crop, double cropping, relay	make selection	0
Irrigation Water Management (use of soil moisture sensors/evapotranspiration meters with center pivots & sprinklers; above ground drip tape, drip emitters; micro-sprinklers; use of below tarp irrigation, below ground drip tape; dry	make selection	0
Mulching with Natural and Artificial Materials (mulching with permeable artificial materials (i.e., landscape fabrics, synthetic mulches), mulching with	make selection	0
Erosion Barriers (wattles, silt fences)	make selection	0

Field-adjacent Mitigation Measures		
Category	**Select Value**	**Number of points**
Grassed Waterway	make selection	0
Vegetative Filter Strips or Field Border adjacent to field	make selection	0
Vegetated Ditch	make selection	0
Riparian Forest Buffer; Riparian Herbaceous Cover	make selection	0
Constructed and Natural Wetlands (constructed and natural wetlands, wetland and riparian landscape/habitat improvement)	make selection	0
Terrestrial Habitat Landscape Improvement (critical area planting, cross wind trap strips, hedgerow planting, herbaceous wind barriers, windbreak-shelterbelt establishment and renovation, tree shrub planting, forest stand improvement, upland wildlife habitat management)	make selection	0
Filtering Devices (filters, sleeves, socks, or filtration units containing activated carbon or compost amendments)	make selection	0

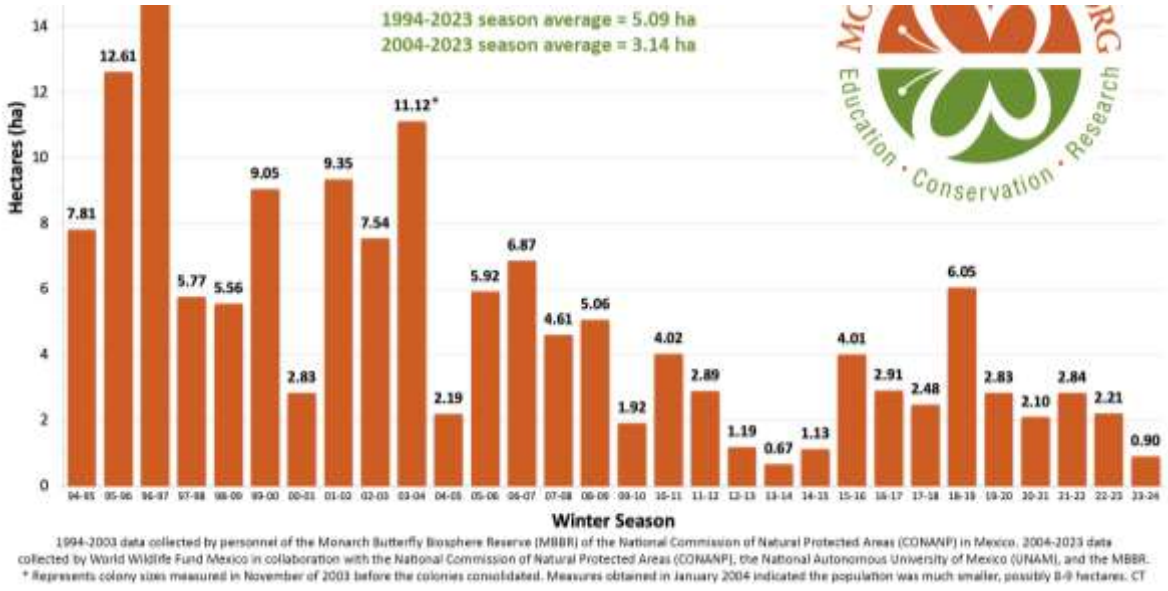
Other Mitigation Measures		
Category	**Response based on selections above**	**Number of points**
Using mitigation measures from multiple categories (practices from at least two of the following categories: in-field, field-adjacent, or systems that capture	no	0



Pesticide Use Limitation Areas (PULAs)

What ESA means for sugarbeet producers

- Incentivizes low-end use rates of pesticides and larger droplet sizes that risk reduced efficacy
- In-field buffers could reduce productivity
- Must check Bulletins Live! 2 after planting decisions but before applications
- Rented land limits options to mitigate drift and runoff
- Mixtures add exponential complexity
- Penalizes aerial applications



1994-2003 data collected by personnel of the Monarch Butterfly Biosphere Reserve (MBBR) of the National Commission of Natural Protected Areas (CONANP) in Mexico. 2004-2023 data collected by World Wildlife Fund Mexico in collaboration with the National Commission of Natural Protected Areas (CONANP), the National Autonomous University of Mexico (UNAM), and the MBBR.
* Represents colony sizes measured in November of 2003 before the colonies consolidated. Measures obtained in January 2004 indicated the population was much smaller, possibly 8-9 hectares. CT

Factors driving monarch declines

Agricultural advances that drive productivity gains and reduced environmental footprint

Climate change and extreme weather events

Loss of overwintering habitat (Mexico, coastal California)

Land conversion, urbanization

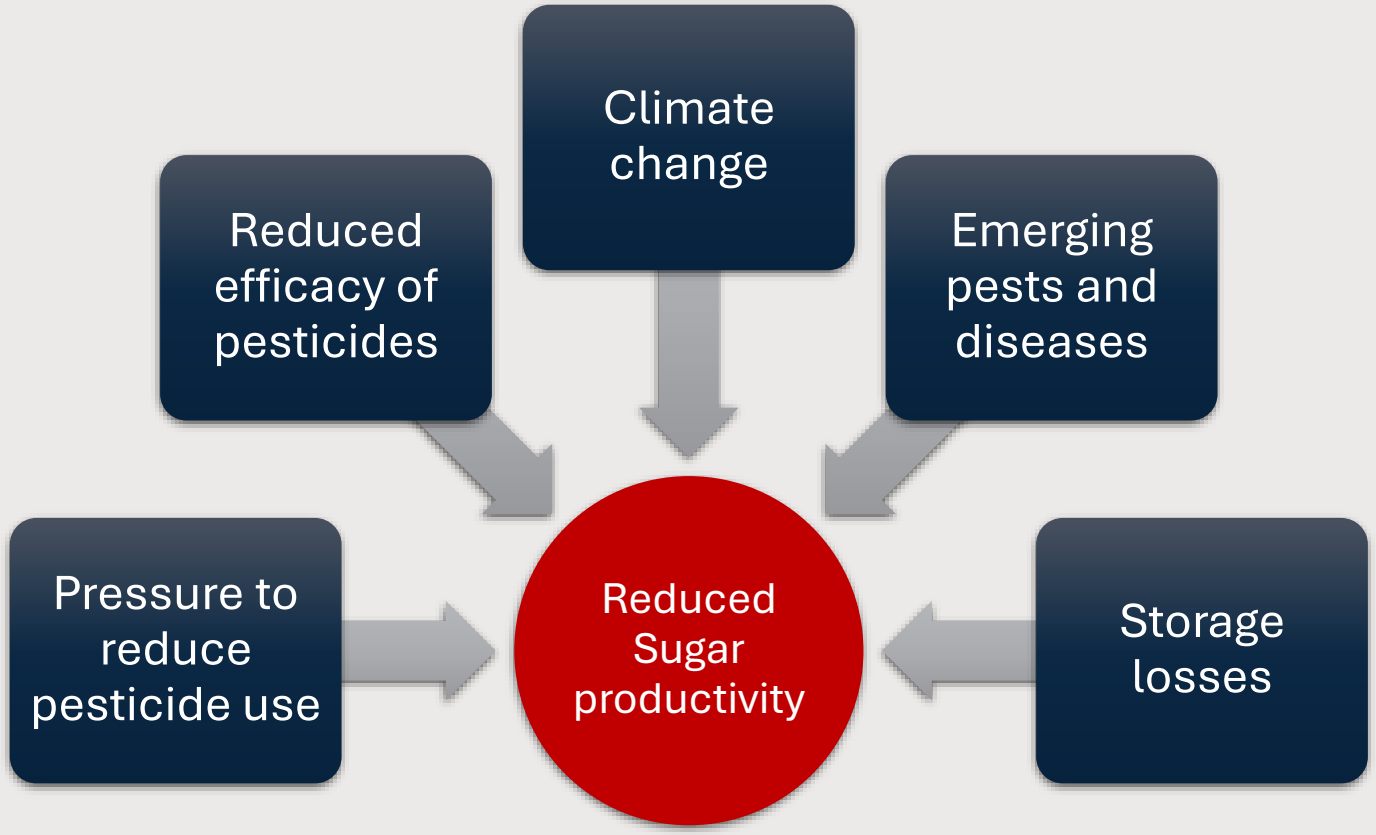
Bees and other pollinators

Colony collapse disorder often blamed on modern agricultural practices, including pesticide exposure

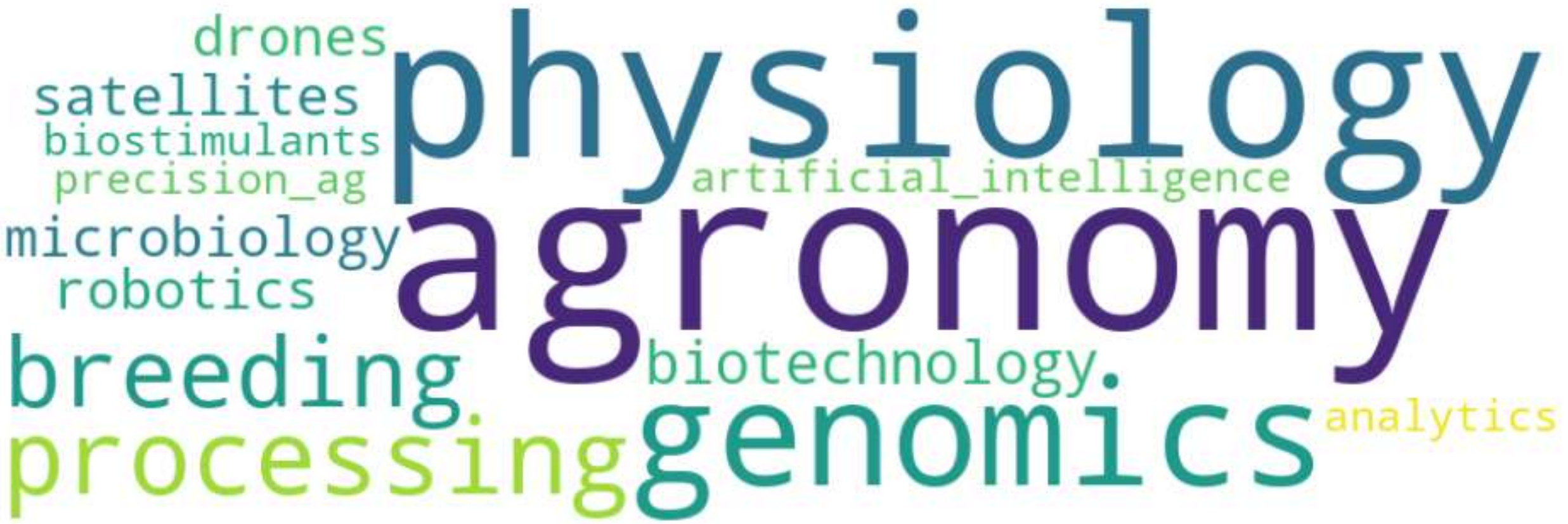
Pesticide Resistance

- Resistance evolution is a natural phenomenon as weed, disease and pest populations adapt to environmental stresses
- Affects all approaches to pest management
  - Cultural, biological chemical, host plant tolerance
- Cercospora resistance to organotin, demethylation inhibitor (DMI) fungicides, benzimidazole fungicides, strobilurins, and quinone outside inhibitor (QoI) fungicides
- Glyphosate-resistant waterhemp on more than 60% of U.S. sugarbeet acres

Environmental Pressures Drive Innovation



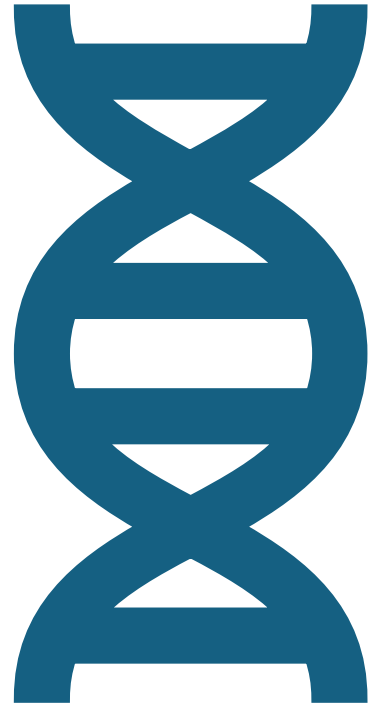
New Technologies Open Up Opportunities for Innovation



Human Ingenuity

Biotech Opportunities

- Accelerated breeding
- Mining genomes of wild relatives
- Genetically modified (transgenic) traits for herbicide tolerance and (potentially) insect and disease resistance
- Genome editing for disease resistance and storage quality
- RNA-interference
- Modified microbes
- Etc…



Need to maintain and improve regulatory frameworks that support new technologies

Effective Federal Regulations Are Key to the Success of American Agriculture

- Ensure safe and reliable food production and supply
- Risk-proportionate
- Legally defensible
- Recognize benefits of technology to agriculture and food
- Sustainability, carbon, and climate will continue to grow in importance

Regulatory and Legislative Support for New and Emerging Technologies

- New breeding techniques
- Farm Bill support for precision ag
- Drones/UAVs – FAA and EPA
- Biologically-derived products: biofertilizers, biopesticides
- New and under-used chemistries

ASGA thanks all those delivering innovation and technology in sugarbeet production

University Research and Extension	USDA-ARS	Scientific societies: IIRB, ASSBT	Sugarbeet Cooperative Ag. Departments
Seed companies	Multinational ag companies	Start-ups and small-to-medium size enterprises	Local grower associations, BSDF, US Beet & ASGA