

Animal & Plant Biotechnology

WILD WORLD OF WONDER AG

Total Unit Running Time: 40-50* minutes

FIELD TRIP: **Agriculture Solutions**

Running Time: 8:19

NGSS: HS-ETS1-1



Ride along in the farming combine during corn harvest season with VVR Host, Steve Grubbs, and Farmer Rick Kimberely. See how the modernization of farm equipment allows for higher crop yields that are also more efficient and environmentally friendly. While on the farm, also learn about the purpose of GMOs and how prevalent they are in more food production.

For more information on Iowa farming, please visit lhf.org/learning-fields/crops/iowa-farm-facts/

INTERACTIVE EXPERIENCE: **GMO Cafe**

Running Time: Self-paced*



As students partake in this unique interactive dining experience they are presented a menu filled with special, yet common foods to most teenage palates. Each element of the cuisine is derived from genetically-modified organisms to some degree. Students select a meal based on their tastes and when it's presented at their table, information about each GMO-influenced ingredient pops up to satiate their thirst for learning about this topic. If time allows, students can continue to order meals until they've exhausted all menu options.

COMIC BOOK: **Save The Bees**

Running Time: 5:22

NGSS: HS-ETS1-1, HS-ESS3-6



Topics Covered

- Importance of bees to the ecosystem
- Concept of phenology
- 3 main causes of bee population decline

Assessment Answer Key & Critical Thinking Skills

1. A (BT2--comprehension)
2. B (BT1--knowledge)
3. A (BT2--comprehension)
4. D (BT5--synthesis)
5. A (BT4--analysis)

THEATER: **Sustainable Farming & The Super Weed**

Running Time: 7:13

NGSS: HS-ETS1-1, HS-ESS3-2



Topics Covered

- Benefits of greenhouse farming practices
- Problems with herbicides & pesticides
- Concepts of sustainable practices, genetic modification

Assessment Answer Key & Critical Thinking Skills

1. D (BT1--knowledge)
2. A (BT4--analysis)
3. B (BT1--knowledge)
4. D (BT3--application)
5. C (BT2--comprehension)

TEACHER DEMO: **Genetic Engineering With Wendy**

Running Time: 9:38

NGSS: HS-ETS1-4

Vocabulary: biotechnology, microcentrifuge, genetic engineering



Topics Covered

- DNA & ELISA Testing
- Purposes of biotech lab equipment
- Genetic engineering & GMOs

Assessment Answer Key & Critical Thinking Skills

1. D (BT1--knowledge)
2. D (BT2--comprehension)
3. A (BT4--analysis)
4. C (BT2--application)
5. D (BT2--comprehension)

RELATED STEM CAREERS: Bioengineer, Genetic Counselor, Agronomist

Science Standards:

NGSS: HS-ETS1-1, HS-ETS1-4, HS-ESS3-2, HS-ESS3-6; **TEKS:** 112.34(c.3.D), 112.34(c.6.H), 112.34(c.7.C), 112.34(c.7.E), 112.34(c.11.B), 112.34(c.12.F), 112.37(c.3.E), 112.37(c.4.G), 112.37(c.4.H), 112.37(c.5.A), 112.37(c.5.C), 112.37(c.7.C), 112.37(c.9.F), 112.37(c.9.G), 130.11(c.8.A), 130.11(c.8.B), 130.11(c.8.C), 130.11(c.8.D), 130.25(c.15.A), 130.403(c.2.B), 130.403(c.8.A), 130.403(c.8.B), 130.403(c.8.E), 130.415(c.3.G), 130.415(c.3.H), 130.415(c.4.D), 130.415(c.4.G), 130.415(c.5.D), 130.415(c.8.A), 130.415(c.8.B), 130.415(c.8.G), 130.415(c.10.A), 130.415(c.10.D); **CPALMS:** SC.912.L.14.6, SC.912.L.14.7, SC.912.L.15.3, SC.912.L.15.15, SC.912.L.16.7, SC.912.L.16.10, SC.912.L.16.12, SC.912.L.17.13, SC.912.L.17.15, SC.912.L.17.17, SC.912.L.17.20, SC.912.L.17.8, SC.912.N.4.1, SC.912.N.4.2,