Topic 1: Cattle with slick coats

Paragraph A
Traditional cattle breeds struggle in hot, humid climates, leading to heat stress that reduces their productivity and health. Farmers in tropical regions often see their cattle suffer from decreased milk production, slower weight gain, and higher rates of disease. The thick, heavy coats that protect cattle in cooler climates become a liability in extreme heat. Ranchers have long sought solutions to help their herds cope with rising temperatures, especially as climate change intensifies heat waves across cattle-raising regions.

Paragraph B
Scientists discovered a natural genetic variant that produces a shorter, sleeker coat in some cattle breeds. This “slick” gene allows cattle to regulate their body temperature more efficiently by facilitating better heat dissipation through the skin. Cattle with slick coats show improved feed efficiency, better reproductive rates, and higher overall productivity in hot environments. By introducing this gene into traditional beef and dairy breeds, researchers have created heat-tolerant cattle that thrive in climates where conventional breeds struggle, offering hope to farmers facing the challenges of global warming.

Write your new paragraph below:

Topic 2: Bt corn

Paragraph A

Corn farmers have battled destructive insects for generations, with pests like the European corn borer causing billions of dollars in crop damage annually. These insects tunnel into corn stalks and ears, weakening plants and reducing yields significantly. The resulting Bt corn produces its own protection against destructive pests, eliminating the need for multiple pesticide applications. Traditional pest control required repeated applications of chemical insecticides throughout the growing season. The spraying process was expensive, time-consuming, and raised environmental concerns about pesticide runoff into waterways and effects on beneficial insects like bees and butterflies.

Paragraph B

A common soil bacterium called *Bacillus thuringiensis* naturally produces proteins that are toxic to certain insect larvae but completely harmless to humans, animals, and beneficial insects. Scientists isolated the gene responsible for an insect-fighting protein and successfully inserted it into corn plants. Farmers growing Bt corn have reported significant yield increases, reduced production costs, and less environmental impact from decreased chemical use, while maintaining safe food for human consumption.

Write your new paragraph below:

Topic 3: Arctic apples

Paragraph A
When apples are cut or bruised, they quickly turn brown due to a natural enzymatic reaction. This browning doesn't affect taste or nutrition, but consumers often perceive brown apples as old, damaged, or unappetizing. The fresh-cut apple industry faces significant waste as sliced apples must be treated with chemical solutions like calcium ascorbate or lemon juice to prevent browning. Schools, restaurants, and food service companies discard tons of perfectly good apples simply because of cosmetic browning, contributing to food waste and economic losses.

Paragraph B
Scientists developed Arctic apples by "silencing" the genes responsible for producing polyphenol oxidase, the enzyme that causes browning. These genetically modified apples maintain their fresh, white appearance for weeks after being cut, without any chemical treatments. The modification doesn't affect the apple's flavor, texture, or nutritional content—it simply prevents the browning reaction. Arctic apples offer a solution to the fresh-cut apple industry, reducing food waste significantly, and making healthy snack options more appealing to consumers, particularly children who might otherwise reject brown apple slices.

Write your new paragraph below:

Topic 4: AquAdvantage salmon

Paragraph A

Traditional salmon farming faces limitations in meeting the growing global demand for this nutritious fish. Farm-raised Atlantic salmon typically require 24 to 30 months to reach market size, consuming significant amounts of feed and occupying valuable tank or pen space throughout this extended growth period. The long production cycle increases costs for farmers and limits the supply of affordable salmon to consumers. Wild salmon populations continue to decline due to overfishing and habitat loss, making aquaculture increasingly important for sustainable seafood production.

Paragraph B

AquAdvantage salmon contain genes from Chinook salmon and ocean pout that enable year-round growth hormone production instead of only during warm seasons. This genetic modification allows the salmon to reach market size in approximately 16 to 18 months, nearly half the time of conventional farmed salmon. The faster-growing salmon require less feed per pound of fish produced and reduce the environmental footprint of aquaculture operations. These fish are raised in contained land-based facilities, preventing any interaction with wild populations, and studies confirm they are nutritionally equivalent to traditional salmon while offering a more sustainable protein source for a growing human population.

Write your new paragraph below:

Topic 5: Rainbow papaya

Paragraph A

In the 1990s, Hawaii's papaya industry faced complete devastation from the papaya ringspot virus, a disease that causes stunted growth, distorted leaves, and ring-shaped spots on the fruit. Infected trees produced inedible fruit and eventually died, and the virus spread rapidly through aphid insects that fed on the plants. Hawaiian papaya farmers watched helplessly as the disease swept through their orchards, destroying nearly half of the state's papaya production. By the mid-1990s, entire farming communities faced economic ruin, and it seemed Hawaii's papaya industry might disappear entirely.

Paragraph B

Scientists developed the Rainbow papaya by inserting a gene from the ringspot virus itself into the papaya plant, creating a form of genetic immunization. This modification allows the papaya tree to recognize and resist the virus before it can cause damage, similar to how vaccines work in humans. The Rainbow papaya saved Hawaii's papaya industry from collapse and allowed farmers to resume profitable production. Today, these virus-resistant papayas represent one of the most successful examples of genetic modification solving an agricultural crisis, and the fruit is safe, nutritious, and indistinguishable in taste from conventional papayas.

Write your new paragraph below:

Topic 6: Pink pineapple

Paragraph A

Traditional pineapples have yellow flesh due to the presence of carotenoid pigments, which are nutritious and give the fruit appearance. Consumers have become increasingly interested in novel and unique food experiences, with specialty produce commanding premium prices in markets. The pineapple industry sought ways to differentiate their products and create excitement around this tropical fruit. Plant breeders recognize that adding visual appeal could increase consumer interest and create new market opportunities for growers.

Paragraph B

Pink pineapples, marketed as Pinkglow, contain modified genes that allow them to produce lycopene, the same antioxidant that gives tomatoes and watermelons their red color. The pineapple industry sought ways to differentiate their products and create excitement around this tropical fruit. Scientists decreased the expression of enzymes that convert lycopene to other pigments, allowing the pink-red color to remain in the fruit's flesh. The genetic modification also reduces the enzyme that produces pineapple's characteristic acidity, resulting in a sweeter taste that many consumers prefer. These striking pink pineapples offer the same nutritional benefits as regular pineapples while providing additional lycopene, creating a product that is potentially more healthful.

Write your new paragraph below:

Topic 7: Chicory

Paragraph A

Chicory plants naturally produce inulin, a dietary fiber that promotes digestive health, but conventional chicory varieties don't produce enough inulin to meet the growing industrial demand. Food manufacturers increasingly use inulin as a fat substitute, sugar replacement, and prebiotic fiber supplement in processed foods ranging from yogurt to protein bars. Extracting sufficient inulin from traditional chicory requires extensive agricultural land and processing facilities. As consumer demand for healthier food ingredients continues to rise, the food industry needs more efficient sources of this valuable plant fiber.

Paragraph B

Genetically modified chicory has been developed to produce significantly higher levels of inulin in its roots, making extraction more efficient and cost-effective. Scientists enhanced the plant's natural inulin-producing pathways by modifying genes that control fiber synthesis and storage. These high-inulin chicory varieties can produce two to three times more inulin per acre than conventional plants, reducing the land and resources needed for production. The modification provides a sustainable way to meet growing demand for natural fiber ingredients while supporting the food industry's shift toward healthier product formulations without synthetic additives.

Write your new paragraph below: