Teacher Answer Key

Case Study

1. The cobs show non-shattering attachment scars, more kernel rows, and fewer branching nodes. Farmers would favor all three because a cob that holds its kernels can be harvested instead of scattering, more rows means more food per plant, and less branching puts the plant's energy into ears rather than side shoots.

2. Growing seeds from different landraces side by side under the same water and soil removes the environment as a variable, so any remaining differences have to come from the plants themselves. When some plants still do better in cool thin air and others in hot floodplain conditions, that difference is inherited, not a product of where they happened to be grown.

Multiple Choice

1. C

2. A

3. C

Matching

1-B, 2-D, 3-E, 4-C, 5-A

Fill-in-the-Blank

1) non-shattering, 2) heterosis, 3) landraces

Short Answer (Sample Responses)

Q1: Cultural/culinary fit, agro-ecological resilience (drought, altitude, pests), seed sovereignty, and genetic diversity for future breeding.

Q2: The alkaline process frees niacin, improves protein quality, enhances mineral availability (calcium), and creates doughs with better texture for tortillas and tamales.

Q3: Select for sweet corn alleles that slow sugar-to-starch conversion (e.g., su, se, sh2); these maintain higher sugar post-harvest for longer sweetness.