

2.6. Spatial resolution. The natural resource management agency you work for in the intermountain west is considering the purchase of 30 m satellite imagery for assisting in the management of their natural resources. How much area, in acres, does a single 30 m grid cell cover? How much area, in acres, does a single 10 m grid cell cover?

When one talks of satellite imagery and grid cells, they are generally inferring that the grid cells are (nearly) square. We will assume here that the grid cells are squares.

A single 30 m grid cell suggests that each cell is 30 m on each side. The total land area within the cell is thus 900 square meters.

For those using the metric system:

$$900 \text{ m}^2 = 0.09 \text{ ha (10,000 m}^2 \text{ per hectare)}$$

For those using the English system:

$$900 \text{ m}^2 = 9,688.5 \text{ ft}^2 \text{ (assuming one meter = 3.281 feet, and a square meter is 10.765 ft}^2\text{)}$$
$$9,688.5 \text{ ft}^2 = 0.22 \text{ acres (43,560 ft}^2 \text{ per acre)}$$

CHECK: There are 2.471 acres in a hectare. 0.09 hectares thus represents 0.22 acres (0.09 ha x 2.471 acres per ha).

A single 10 m grid cell suggests that each cell is 10 m on each side. The total land area within the cell is thus 100 square meters.

For those using the metric system:

$$100 \text{ m}^2 = 0.01 \text{ ha (10,000 m}^2 \text{ per hectare)}$$

For those using the English system:

$$100 \text{ m}^2 = 1,076.5 \text{ ft}^2 \text{ (assuming one meter = 3.281 feet, and a square meter is 10.765 ft}^2\text{)}$$
$$1,076.5 \text{ ft}^2 = 0.025 \text{ acres (43,560 ft}^2 \text{ per acre)}$$

CHECK: There are 2.471 acres in a hectare. 0.01 hectares thus represents 0.025 acres (0.01 ha x 2.471 acres per ha).