Active Sensing Systems – Remote sensing systems which measure the characteristics of a reflected signal generated from an object bombarded with a signal from the sensor. *e.g.,* radar.

Aerial Photography – Remote sensing technique in which either an orbital satellite or aircraft records a photograph of a portion of the Earth's surface.

Archive – The storage of historical records and data collected over a number of years. *e.g.,* The Landsat data archive stored since the 1980's.

ASCII – (American Standard Code for Information Interchange). A standard coding system used for identifying alphanumeric characters within a computer.

Aspect – The horizontal direction that a slope faces.

Attribute Value – A numerical measure of a spatial element.

Band – A discrete interval of the electromagnetic spectrum between two wavelengths measured by remote sensing systems.

Baud Rate – A measure that describes how rapidly single digital elements are transmitted over a communications line.

Bit – An abbreviated term for binary digit, the smallest unit of computer data.

Block Kriging – A spatial interpolation method used to predict unknown values at unsampled sites by appropriately weighting the known values at sample sites based on grid cells.

Byte – A unit of computer storage of binary data usually comprising eight bits, and equivalent to a character.

Carrier – An encoded radio frequency signal in which information is transmitted.

Centroid – The position at the centre of an entity. Usually the middle of a 2-dimensional object such as a polygon.

Channel – The necessary circuitry for a GPS receiver to receiver signals from a single GPS satellite.

Choropleth Map – A map which shows regions or areas which have the same characteristics, such as a yield map, where quantitative spatial data is depicted by different colour variations of yield ranges.

Classification – The process of assigning individual pixels of a digital image to classes based on spectral reflectance.

Coarse Acquisition (C/A) – A unique code for each GPS satellite that is accessible by the public for single and group use.

Continuous Management – A management system in which agricultural inputs are applied to a field on a point-by-point basis.

Coefficient of Variation (CV) – It is a measure of the relative dispersion of an attribute and is simply the standard deviation divided by the overall mean.

Contour Line – A line drawn on a map connecting a set of points all of which have the same value.

Decision Support System (DSS) – A system that is capable of integrating diverse data sources with expert knowledge and decision models to aid in the making strategic decisions.

Differential Correction – The correction of the GPS signal to make it more accurate. This requires a secondary GPS receiver, called a base station, placed at a point of known position. The base station then measures bias errors that are used to correct bias errors at the location of interest. There are three common ways to access a correction signal from a base station.
1. A marine beacon
2. From a commercial FM radio station frequency supplied by AUSNAV.
3. A satellite provided by a specialised GPS operator.

Digital Elevation Model (DEM) – A digital representation of the continuous variation of elevation over space.

Electromagnetic Radiation (EMR) – Energy that is reflected or emitted from objects in the form of electrical and magnetic fields.

Electromagnetic Spectrum – All the wavelengths of electromagnetic energy including visible light, infrared light, ultraviolet light and radio waves.

Enhanced Thematic Mapper (ETM) – A passive sensor carried on Landsat 7.

Expert System – A computer program that uses techniques normally associated with a human expert such as knowledge, heuristics and inference to solve a narrowly defined set of problems.

Extrapolation – The prediction of the value of a variable outside the measured range or an inference of the value of a variable.

Geocode – A code representing a spatial element which describes its location incorporated into a GIS.

Geographic Data – Data which records the shape and location of a feature as well as associated characteristics which define and describe the feature

Geographic Information Systems (GIS) – A computerised database designed to efficiently capture, store, update, manipulate, analyse, and display all forms of geographically referenced information.

Georeferenced Data – Spatial data that pertains to a specific location on the earth's surface.

Georeferenced System – A coordinate system keeping track of specific points on the Earth's surface. An example of such a system is the Universal Transverse Mercator system (UTM).

Global Positioning System (GPS) – A network of 24 radio-transmitting satellites developed by the US Department of Defence to provide accurate geographical position fixing.

Grid – A data structure that uses a set of grid cells forming a regular, or nearly regular, tessellation of a surface to represent an area like a field.

Ground Control Point (GCP) – An easily identifiable feature with a known location that can be used with other GCPs to geometrically correct an image.

Ground Truth – The collection of information on the Earth's surface at the same place and time as a remote sensor gathers data. This permits the interpretation and calibration of remotely sensed data sources such as a yield maps.

Guidance System – A system of equipment for automatically guiding the path of a vehicle.

Hyperspectral Sensor – A sensor capable of simultaneously measuring hundreds of individual wavelengths of the electromagnetic spectrum.

Image Rectification – The process by which an image or grid is converted from image coordinates to real-world coordinates.

Interpolation – The process of predicting unknown vales between neighbouring known data values.

Inverse Distance Weighting – A spatial interpolation method that assigns greater influence to known samples closer to a desired location.

Kriging – A method that interpolates data from a known set of sample points to a continuous surface by assigning a set of weights to the samples based a semivariogram model, the locations of the samples relative to each other, and to the point or block being estimated.

Landsat (Land Satellite) – A series of unmanned earth-orbiting satellites used to study the earth's surface.

Latitude/Longitude – A polar coordinate system that specifically describes a position on the earth. Latitude is the north to south position. Longitude is the east to west position. Locations are described in units of degrees, minutes and seconds.

Map-Based Variable-Rate Application System – A system which adjust inputs based on a pre-made electronic map of the input using a differentially corrected positioning system to determine the applicator position in the field

Map Projection – A systematic transformation of locations on the spherical globe to locations on a flat plane while maintaining spatial relationships.

Mean – The average of a set of data in which the values of all observations are added together and divided by the number of observations.

Mosaic – The process of joining database files for adjacent areas into a single file or image.

Multispectral Sensor – A sensor that obtains imagery from several different portions of the electromagnetic spectrum at one time.

Nearest Neighbour – A spatial interpolation method whereby the predictions of attributes at unsampled points are provided by the single nearest data point.

Near Infrared (NIR) – Portion of the electromagnetic spectrum lying near the red end of the visible spectrum. Wavelengths around 700-3000 nm.

Noise – Random variations or error in a data set.

Normalised Difference Vegetation Index (NDVI) – An index of vegetation biomass commonly used to estimate the potential yield of a cotton plant.

Panchromatic – A film sensitive to all or most of the visible spectrum, between 0.4 and 0.7 micrometers. Landsat 7 has a panchromatic band.

Passive Sensing System – Remote sensing systems which receive the naturally emitted and reflected signals from sensed objects.

PCMCIA Card – A removable card that is able to hold large quantities of data and able to withstand the harsh environmental conditions used by most yield monitors.

Pixel – A term used in remote sensing which is an abbreviation for "picture element". A pixel is simply the smallest picture element of a digital image. The smaller the pixels, the higher the resolution of an image.

Polygon – A multisided figure that represents area on a map such as a similar yields range, land use or soil type.

Precise (P) Code – Is a confidential pseudorandom code transmitted by GPS satellites.

Pseudorandom Noise (PRN) – It is a regular binary sequence of code that has noise-like properties. It is merely measuring the distance to a satellite.

Pseudo Range – It is a measurement of the true distance of a GPS receiver from a satellite.

Raster Format – These are images that are represented by a matrix of row and column data points whose values which when taken together, describe the display of an image on an output device.

Real-Time Correction – The practice of correcting the GPS signal by immediately sending the differential correction information to mobile receiver in use.

Real-Time Kinematic (RTK) – A procedure where carrier-phase corrections are transmitted in real-time from a reference receiver to a user's receivers.

Remote Sensing – The collection of information about an object, series of objects or landscape without being in physical contact with the object or event.

Scale – The ratio or fraction between the distance on a map, chart, or photograph and the corresponding distance on the ground.

Selective Availability (SA) – Adopted by the US Department of Defence to introduce some error into the GPS satellite signals to reduce their accuracy for civilian users. This policy was discontinued as of May 2000 and is now turned off.

Semivariance – A measure of how much neighbouring data points differ in value. Equal to half one-half the squared difference, it is used by the spatial interpolation technique of Kriging.

Semivariogram – A line fit to a graph plotting the semivariance against distance for Kriging.

Sensor-Based Variable-Rate Application Systems – Systems which create applications maps by processing field data collected from real-time sensors as the implement moves through the field to alter an input, on-the-go.

Site-Specific Crop Management (SSCM) – A management systems that takes into account the variability of crop and soil parameters to make decisions on the application of production inputs.

Spatial Prediction – This refers is any prediction method that incorporates spatial dependence.

Spatial Resolution – Refers to the size of the smallest object on the ground that an imaging system, such as a satellite sensor, can distinguish.

Spatial Variability – Is the differences in field conditions from one location to another in the same field.

Spectral Resolution – The capability of a sensing system to distinguish between electromagnetic radiation of different wavelengths.

SPOT – The name of a series of French satellites used to study the earth's surface.

Standard Deviation – A statistical term that tells how spread out numbers are from the average, calculated by taking the square root of the average of the squares of the deviations from the mean.

Temporal – Pertaining to time, such as temporal variation (variation over time).

Temporal Resolution – The time taken for a satellite to revisit the same location.

Thermal Band – The infrared wavelengths of the electromagnetic spectrum.

Thematic Map – A map depicting selected kinds of information relating to one or more specific themes such as yield or soil type.

Universal Transverse Mercator (UTM) – A commonly used planar coordinate system that uses a set of transverse mercator projections to divide the globe into 60 zones, each covering 6 degrees longitude.

Variable-Rate Application (VRA) – The adjustment of crop production inputs such as fertiliser to match conditions within a field.

Variable-Rate Technology – Instrumentation used for varying the rates of application of fertiliser, pesticides and seed as it moves across a field.

Variance – A measure of dispersion of a set of data points around their mean value. The square root of the variance is the standard deviation.

Vector Format – A format where positional data is represented in the form of points, lines and polygons where Each of these units is composed of a series of one or more coordinate points.

Yield Monitor – A system that gathers georeferenced yield data by measuring the mass or volume of a harvested crop per unit area, by location, within a field.

Zone Management – A management system in which a field is divided into different zones, based on production potential , for the application of agricultural inputs.