Kansas CCA Exam Study Material Prepared By Dr. Kevin Donnelly with Kansas State Agronomy

Quiz I

A	Symbiosis	_____	Any harmful effect of one plant or microorganism on other organisms through the production and release of chemical compounds into the environment.
B	Vernalization	_____	The simultaneous demand by two or more organisms for limited environmental resources.
C	Stratification	_____	The removal of moisture from a material.
D	Phototropism	_____	Excess stem growth due to low light or excessive plant population.
E	Lodging	_____	The process in which a liquid is changed into a gas.
F	Germination	_____	Shoots growing upward and roots growing downward in response to gravity.
G	Evaporation	_____	The resumption of growth of a seed embryo after a period of dormancy. Requires adequate water, oxygen, and suitable temperature.
H	Desiccation	_____	Adding Rhizobium to legume seeds.
I	Competition	_____	Condition in which stalks or stems break or fall above the soil surface, because of weak stalk, weak roots, damage, or weather events.
J	Geotropism	_____	The growth and flowering response of plants in relation to changes in the length of daylight hours.
K	Photoperiodism	_____	Bending of plants toward the direction of light.
L	Allelopathy	_____	Scratching the surface of hard seeds to break dormancy.
M	Inoculation	_____	Exposure of seeds or to low temperatures to break dormancy.
N	Etiolation	_____	Relationship between two organisms in which both benefit.
O	Scarification	_____	Exposure of germinating seeds or plants to low temperatures to induce flowering.

Quiz II

A	Determinate plant	_____	Plants whose seeds germinate in the spring, the plants produce seed and die the same fall
B	Long day crop	_____	Plants whose seeds germinate in the fall, the plants produce seed in the spring and die in the summer.
C	Annual, winter	_____	A flowering plant that takes 12-24 months to complete the life cycle. It grows vegetative the first year and reproduces the second year.
D	Perennial plant	_____	A crop whose flowering is not influenced by day or night length.
E	Annual, summer	_____	A plant that once it reaches flowering, shifts from vegetative to reproductive growth over a relatively short time.
F	Day neutral crop	_____	Plant that continues vegetative growth after reproductive growth has begun.
G	Short day crop	_____	Crop in which flowering occurs when night length is less than the crop's required critical length.
H	Biennial plant	_____	Plants that have vegetative structures that allow them to live more than 2 years.
I	Indeterminate plant	_____	A crop in which flowering is initiated when the crop's critical night length is exceeded.

Quiz III

A	Precision agriculture	_____	Tillage where all plant residues are covered to prevent growth of all vegetation except that of the crop being produced.
B	Green manure crop	_____	A crop sown with another crop, especially one that will emerge and develop slowly. Also called a nurse crop.
C	Cropping pattern	_____	Using the best technologies to identify and manage in-field soil and crop variability to improve production and economic return.
D	Management zone	_____	Crop grown to 1) protect the soil from erosion; 2) scavenge excess nutrients from a previous crop to prevent nutrient loss; or both.
E	Companion crop	_____	A sub-region of a field that has a relatively uniform combination of yield limiting factors where a single level of crop management is appropriate.
F	Cover crop	_____	A system in which one crop is planted into a standing crop prior to harvest of the established crop, which does not hinder the yield of either crop.
G	Fallowing	_____	The practice of growing different crops in a planned regular sequence on the same land.
H	Double cropping	_____	The yearly sequence and spatial arrangement of crops, or crops and fallow, in a given area.
I	Continuous cropping	_____	The practice of consecutively producing two crops of either like or unlike commodities on the same land within the same year.
J	Intercropping	_____	Land not being used to grow a crop, but on which plant growth is controlled with tillage or herbicides. Used to store water, control weeds, and increase available soil
K	Relay cropping	_____	Living plant material incorporated into the soil while green for soil improvement.
L	Monoculture	_____	Growing two or more crops together in the same field at the same time.
M	Crop residue	_____	Growing the same crop continuously in the same field, year after year.
N	Crop rotation	_____	Crop production systems that do not use synthetic pesticides or fertilizers
O	Clean till	_____	Growing a crop in a field every year.
P	Organic farming	_____	Plant material remaining in the field after harvest.

Quiz IV

A	Vegetative stage	_____	Another name for flowering; generally used in describing flowering of grass plants.
B	Physiological maturity	_____	A grass growth stage when an inflorescence is enclosed by the sheath of the uppermost flag leaf, just prior to inflorescence emergence.
C	Harvest Maturity	_____	Stage of seed development at which the endosperm is pliable, defined as the time when 50% of the seeds on an inflorescence have dough-like endosperm.
D	Flowering stage	_____	The physiological stage when anthesis occurs in a plant, or flowers are visible in nongrass plants.
E	Boot stage	_____	The developmental stage of a grass plant from initial emergence of the inflorescence from the boot until the inflorescence is fully emerged.
F	Heading	_____	Plant growth stage when grain moisture level is low enough for safe storage.
G	Anthesis	_____	In grain, the stage of development following pollination in which the endosperm appears as a whitish liquid like milk.
H	Milk stage	_____	Plant growth stage representing the end of reproductive development, where the maximum dry weight has been accumulated.
I	Dough stage	_____	The transfer of pollen from the anther to the stigma of a flower.
J	Pollination	_____	Crop showing only root, stem and leaf growth.

Quiz V

A	Pedicel	_____	The pollen-bearing male portion of a stamen.
B	Flag leaf	_____	A grass inflorescence, the main axis of which is unbranched, with spikelets attached sessile.
C	Rachis	_____	The uppermost leaf on a fruiting grass stem. The leaf immediately below the inflorescence.
D	Panicle	_____	The flowering part of a plant or arrangement of flowers on a stalk.
E	Stigma	_____	A grass inflorescence, the main axis of which is branched, and whose branches bear the spikelets.
F	Anther	_____	The central axis of an inflorescence.
G	Spike	_____	The stem immediately below and supporting an inflorescence.
H	Inflorescence	_____	The stem immediately below and supporting an individual flower or spikelet.
I	Peduncle	_____	The female part of a flower where pollen is deposited.

Quiz VI

A	Remote sensing	_____	The ability of a measurement to be consistently reproduced.
B	Global Positioning	_____	The ability of a measurement to match the actual value of the quantity being measured.
C	Yield map	_____	The system of latitude and longitude that defines the location of any point on the earth's surface.
D	Geographic Information Systems (GIS)	_____	Technology to improve uniformity of application, reduce individual row overlap, and save inputs (planter row control, sprayer boom section control, etc.)
E	Variable Rate Technology (VRT)	_____	Technology to reduce application pass overlap and gaps (ie. light bars, autosteer systems, etc.)
F	Geographic coordinates	_____	The pattern of crop yield in a field based on data collected using a yield sensor on a harvester, and geographic positioning of these yield values using a GPS.
G	Guidance Systems	_____	A system that uses a number of orbiting satellites to identify a location on Earth, based on longitude, latitude, and altitude.
H	Auto Control Systems	_____	A computer system for measuring and relating environmental and crop data to positions on Earth’s surface.
I	Precision	_____	The collection and analysis of data from a distance, often using sensors that respond to different heat intensities or light wavelengths.
J	Accuracy	_____	The ability to vary the application of crop production inputs based on criteria for crop response or soil conditions. Allows for the targeted application of inputs.

Quiz VII

CORN GROWTH STAGES

A	R1 (corn)	_____	Milk stage
B	R2	_____	Dent stage
C	R3	_____	Silking stage
D	R4	_____	Black layer stage
E	R5	_____	Dough stage
F	R6	_____	Tasseling stage
G	VT	_____	Blister stage

Quiz VIII

A	Genetically Modified Organism (GMO)	_____	Indentifying a triat of interest by selection for a specific DNA sequence genetically linked to the gene of interest; useful for traits that are difficult to measure, exhibit low heritability, and/or are expressed late in development
B	Identity-preserved (IP) crop	_____	The inherited ability of a species to survive and reproduce after pesticide treatment. Also refers to the ability of a crop to yield satisfactorily in presence of pests or adverse environmentalconditions.
C	Marker assisted selection	_____	A variety, strain, or race that has originated and persisted under cultivation, or was specifically developed for crop production.
D	Transgenic	_____	First generation progeny resulting from the controlled cross-fertilization between individuals that differ in one or more genes.
E	Resistance, pesticide	_____	Plants pollinated by the wind, insects, birds or animals, and not by human manipulation.
F	Resistance, pest	_____	See also transgenic. A living entity that has been modified or transformed through recombinant DNA technology.
G	Tolerance	_____	Cultivar of a self pollinated crop with genes in homozygous condition, thus breeds nearly true in the next generation, ie. wheat cultivars
H	Variety	_____	The inherited ability of an organism to survive and reproduce following exposure to a dose of pesticide normally lethal to the wild type.
I	Pure line variety	_____	Male parent used in male sterile hybrid breeding, carries nuclear restorer genes necessary to restore fertility in the F1 seed.
J	Self pollinated	_____	Male or female parent used in hybrid seed production.
K	Open pollinated	_____	Female parent used in hybrid seed production.
L	Hybrid	_____	Genetic ability to avoid, repel, or limit attack by a pest by genetic manipulation.
M	Cultivar	_____	A crop in which specific genetic traits are known to exist.
N	Inbred line	_____	A plant pollinated by its own pollen.
O	Male sterile line	_____	Male parent used in hybrid seed production.
P	Pollinator line	_____	Plants or animals that contain DNA derived from a foreign plant or animal.
Q	Restorer line	_____	A taxonomic subdivision of selectively bred individuals that are distinct, uniform, and stable, that are often referred to as a cultivar when registered for use.

Quiz IX

A	Least Significant Difference (LSD)	_____	The mass of a specific plant or plant part in a given area, usually expressed as weight or volume per unit area.
B	Harvest Index (HI)	_____	Total amount of water used to produce a crop; usually measured in inches.
C	Leaf Area Index (LAI)	_____	The loss of water from a given area by both evaporation from plant and soil surfaces, and transpiration from plants.
D	Consumptive Water Use	_____	Heat accumulation, calculated by subtracting a base temperature from an average of the maximum and minimum daily temperatures for an area.
E	Transpiration Ratio	_____	The quantity of harvestable crop product or biomass produced per unit of total biomass.
F	Irrigation efficiency	_____	The number of harvestable plants per unit area remaining at the end of a growing season.
G	Evapo-transpiration (ET)	_____	The ratio of the amount of water actually consumed by a crop or stored in the root zone on an irrigated area to the amount of water applied to the area.
H	Growing Degree Day (GDD)	_____	Total area of leaves displayed per unit of soil area.
I	Harvest population	_____	A statistical range test used to determine true differences among treatment means.
J	Biomass	_____	Amount of water transpired per unit of biomass produced.

Quiz X

A	Pure live seed (PLS)	_____	Viable seed that may not germinate due to impervious seed coat.
B	Seed purity	_____	A seed or soil additive, typically some type of bacteria or fungi, that enhances plant growth and development.
C	Restricted noxious	_____	Seed treated with a coating to increase size and facilitate planting; also used to add micronutrients and/or add inoculum
D	Prohibited noxious	_____	Weeds not allowed in any quantity in seed for sale.
E	Pelleted seed	_____	Percentage of pure germinating seed, calculated as: (% pure seed x % germination)/100.
F	Hard seed	_____	Weeds allowed in only a limited quantity in seed for sale.
G	Viability	_____	Bacteria which fix atmospheric nitrogen in nodules on the roots of legume plants.
H	Safener	_____	Treatment added to seed to counteract the effect of a herbicide.
I	Inoculant	_____	Percentage of pure seed, calculated as: 100 - (% weed seed + % other crop seed + % inert material)
J	Tetrazolium	_____	Chemical used to test for seed viability; used to test for dormant seed.
K	Rhizobium	_____	A measure of the potential for seeds to germinate, grow, and develop normally under favorable conditions.

Quiz XI

A	Carotenoid	_____	Pigment associated with sugar metabolism; gives plants reddish/purple color.
B	Prussic acid	_____	Product of silage fermentation that preserves the silage an gives its unique smell
C	Lactic acid	_____	Pigment primarily responsible for trapping light energy in photosynthesis.
D	Growth regulator	_____	Yellow pigment from the carotenoid group.
E	Phytochrome	_____	A substance that when applied to plants in small amounts either inhibits, stimulates, or otherwise modifies the growth process.
F	Anthocyanin	_____	Pigment responsible for measuring day/night length for photoperiodism responses.
G	Chlorophyll	_____	Nitrogen containing compound found in many plants; often at toxic levels especially in members of the nightshade family
H	Alkaloid	_____	Hydrogen cyanide; toxic compound found in plants under certain conditions, expecially in sorghums
I	Xanthophyll	_____	Pigment that absorbs light energy and also protects chlorophyll from photodamage; appear yellow/orange in color; precurser of vitamin A and antioxidants in humans.

Quiz XII

A	coleoptile	_____	first part to emerge during germination, becomes primary root
B	cotyledon	_____	scar on seed coat that marks point of attachment of seed to ovary wall
C	radicle	_____	outer covering of a true seed (most dicots)
D	endosperm	_____	energy storage portion of dicot seeds
E	hilum	_____	energy storage portion of grass seeds
F	plumule	_____	outer covering of a grass caryopsis
G	pericarp	_____	first structure above soil surface in grass seedling emergence
H	testa	_____	embryonic shoot and leaves
I	hypocotyl	_____	structure that elongates to accomplish emergence in most dicots