Connecticut CTE

Agricultural Education

Agriculture Mechanics A.AM

I **Agriculture Mechanics: Understand the concepts and skills necessary related to agricultural mechanics technology.** A.AM.A

a Identify and explain the uses of the following woodworking tools used in agricultural construction: circular saw, drill press, jig/sabre saw, reciprocating saw, table saw, orbital sander, belt sander, router, portable drill, and miter saw. A.AM.A.1

c List the steps involved in building with concrete, including calculating the amount of concrete required for a job, preparing the base, constructing the forms, pouring the concrete, finishing, and curing. A.AM.A.3

b Identify the following from a technical drawing of an agricultural structure: square feet of the building, height of the building, number of rafters/trusses, and the scale of the drawing. A.AM.A.2

d Define and measure amps, volts, and watts. A.AM.A4.

e Describe the process of installing the following electrical circuits: duplex receptacle, single pole switch with light, and three-way switch with light. A.AM.A.5

f Demonstrate the following skills in plumbing: soldering/sweating a copper joint, cementing PVC fittings, and threading black pipe. A.AM.A.6

g Identify personal protection equipment (PPE) used in welding. A.AM.A.7

h Demonstrate how to safely setup, use, and turn off oxy-acetylene welding equipment. A.AM.A.8

i Demonstrate how to safely set up, use, and turn off shielded metal arc welding (SMAW) equipment. A.AM.A.9

j Demonstrate how to safely set up, use, and turn off a gas metal arc welding system (GMAW). A.AM.A.10

k Use the five-digit AWS classification system for selecting electrodes used in shielded metal arc welding (SMAW). A.AM.A.11

l Analyze the following qualities of welding beads: current, arc length, and travel speed. A.AM.A.12

m Identify the safety and operational procedures and service intervals based on a tractor or equipment operator's manual. A.AM.A.13

n Utilize a Briggs and Stratton repair manual to find engine specifications. A.AM.A.14

o Follow the operator's manual to maintain tractors and skid steers. A.AM.A.15

2 **Safety with Agricultural Chemicals: Understand the concepts and procedures for handling, usage, and storage of agricultural chemicals.** A.AM.B

- a Identify the following from the label of an agricultural chemical container: appropriate use, warning signs, signal words, precautionary statements, EPA Registration Number, directions for use, storage, and disposal. A.AM.B.16
- b Identify the following from a Safety Data Sheets (SDS): first aid measures, firefighting measures, handling and storage, and personal protection equipment (PPE). A.AM.B.17

3 **Career Exploration and Development: Understand the diversity of careers related to the agricultural industry and strategies to acquire and advance in an agricultural career.** A.AM.C

- a Identify 21st century skills required for all careers in agriculture. A.AM.C.18
- b Demonstrate the essential skills that are part of a job search, including preparing the cover letter, resume, application, and participating in the interview process. A.AM.C.19
- c Explain the purpose and types of Supervised Agriculture Experience programs (SAE). A.AM.C.20

4 **Leadership, Personal Growth, and Career Success: Understand the concepts, strategies, and tools needed, which contribute to premier leadership, personal growth, and career success through the participation in FFA.** A.AM.D

- a Identify FFA opportunities, including individual and chapter awards, career development events, leadership skills development, and FFA service engagement. A.AM.D.21
- b Explain the purpose of using parliamentary procedure in FFA meetings. A.AM.D.22
- c Demonstrate knowledge of parliamentary procedures such as use of the gavel, making and amending main motions, debating, and voting. A.AM.D.23
- d Exhibit the skills needed to lead a meeting or activity that engages all participants in the process. A.AM.D.24

Animal Science A.AS

1 **Animal Science: Understand the concepts and skills necessary related to animal science technology.** A.AS.A

a Identify the following breeds of dogs: Labrador Retriever, Golden Retriever, German Shepherd, Yorkshire Terrier, Beagle, Boxer, Poodle, Rottweiler, Greyhound, Dachshund, Bulldog, and Doberman Pinscher. A.AS.A.1

b Identify the following breeds of cats: Maine Coon, Bengal, Russian Blue, Abyssinian, Ragdoll, American Shorthair, Siamese, Manx, Persian, and Himalayan. A.AS.A.2

c Identify the following breeds of pocket pets: Sugar Glider, Gerbil, Hamster, Guinea Pig, Ferret, Chinchilla, white mice, and rats. A.AS.A.3

d Identify the following breeds of rabbits: Netherland Dwarf, Dutch, Flemish Giant, French Lop, American Chinchilla, Holland Lop, Satin, English Angora, Mini Rex, and Himalayan. A.AS.A.4

e Identify the following breeds of birds: Cockatiel, Cockatoos, Parakeets, African Grey, and Blue and Gold Macaw. A.AS.A.5

f Identify the following breeds of reptiles and amphibians: Bearded Dragons, Iguana, Chameleon, Gecko, Boa Constrictor, Corn Snake, Red Ear Slider, Box Turtle, Tree Frog, and Toad. A.AS.A.6

g Identify the following breeds of domestic livestock used for dairy: HolsteinFriesian, Jersey, Guernsey, Brown Swiss, Ayrshire, and Milking Shorthorn. A.AS.A.7

h Identify the following breeds of domestic livestock used for beef: Angus, Hereford, Charolais, Simmental, Belted Galloways, Scotch Highlanders, and Texas Longhorns. A.AS.A.8

i Identify the following breeds of sheep: Dorset, South Downs, Cheviot, Romney, Suffolks, Merino, and Hampshires. A.AS.A.9

j Identify the following breeds of goats: Toggenburg, Alpine, Nubian, Angora, Boer, Pygmy, and Saanens. A.AS.A.10

k Identify the following breeds of swine: Yorkshire, Hampshire, Berkshire, Duroc, American Landrace, Potbellied, and Hereford. A.AS.A.11

l Identify the following breeds of equine: Appaloosa, Arabian, Quarter Horse, Morgan, Thoroughbred, Saddlebred, Paint, Belgian, Clydesdale, Percheron, Friesian, Hackney, Haflinger, Shetland, Hanoverian, and Andalusian. A.AS.A.12

m Evaluate preventive measures for controlling and limiting the spread of common diseases, and common parasites among companion and domestic animals, including vaccination, sanitation, observation, isolation, waste disposal, proper handling, protective clothing, and hand washing A.AS.A.13

n Recognize illnesses and disorders based on symptoms and problems caused by disease, parasites, and disorders among companion, lab and/or domestic animals. A.AS.A.14

o Identify and explain the function of the six nutrients required for life. A.AS.A.15

p Explain the feed ingredients, guaranteed analysis, and feeding guideline components of a feed label/tag. A.AS.A.16

q Determine the most cost effective diet using feeding guidelines and the price per pound of more than one feed. A.AS.A.17

r Interpret domestic livestock and companion animal behaviors and outline safety procedures for working with those species. A.AS.A.18

s Explain the importance of bio-security in relation to domestic livestock and companion animals. A.AS.A.19

t Explain genetic inheritance in domestic livestock and companion animals. A.AS.A.20

u Identify the uses, advantages, and disadvantages of natural breeding and artificial insemination. A.AS.A.21

v Compare and contrast animal welfare in relation to domestic livestock and companion animals. A.AS.A.22

w Describe the locations and functions of domestic livestock and companion animal organs and their systems, including respiratory, circulatory, reproductive, endocrine, urinary, and digestive. A.AS.A.23

x Identify facilities needed to house and manage domestic livestock and companion animals safely and efficiently. A.AS.A.24

---

2 **Safety with Agricultural Chemicals: Understand the concepts and procedures for handling, usage, and storage of agricultural chemicals.** A.AS.B

a Identify the following from the label of an agricultural chemical container: appropriate use, warning signs, signal words, precautionary statements, EPA Registration Number, directions for use, storage, and disposal. A.AS.B.25

b Identify the following from a Safety Data Sheets (SDS): first aid measures, firefighting measures, handling and storage, and personal protection equipment (PPE). A.AS.B.26

---

3 **Career Exploration and Development: Understand the diversity of careers related to the agricultural industry and strategies to acquire and advance in an agricultural career.** A.AS.C

a Identify 21st century skills required for all careers in agriculture. A.AS.C.27

b Demonstrate the essential skills that are part of a job search, including preparing the cover letter, resume, application, and participating in the interview process. A.AS.C.28

c Explain the purpose and types of Supervised Agriculture Experience programs (SAE). A.AS.C.29

4 **Leadership, Personal Growth, and Career Success: Understand the concepts, strategies, and tools needed, which contribute to premier leadership, personal growth, and career success through the participation in FFA.** A.AS.D

a Identify FFA opportunities, including individual and chapter awards, career development events, leadership skills development, and FFA service engagement. A.AS.D.30

b Explain the purpose of using parliamentary procedure in FFA meetings. A.AS.D.31

c Demonstrate knowledge of parliamentary procedures such as use of the gavel, making and amending main motions, debating, and voting. A.AS.D.32

d Exhibit the skills needed to lead a meeting or activity that engages all participants in the process. A.AS.D.33

Aquaculture A.A

1 **Aquaculture: Understand the concepts and skills related to aquaculture production and management.** A.A.A

a Classify the following species of aquatic organisms as fresh water, marine, or diadromous, and by their genus and species: tilapia-Oreochromis mossambicus and Oreochromis nilotica, Atlantic salmon- Salmo salar, chinook salmonOncorhynchus tshawyscha, coho salmon- Oncorynchus kisutch, eastern oysterCrassostrea virginicia, hard clam-Mercinaria mercinaria, American lobsterHomerus americanus, sugar kelp- Saccharina latissima, rainbow troutOncorynchus mykiss, Brook Trout-Salvelinus fontinalis, brown trout- Salmo trutta, channel catfish- Ictalurus punctatus, blue catfish-Ictalurus furcatus, white catfish-Ictalurus catus. A.A.A.1

b Identify the following types of aquaculture systems: raceways, ponds, recirculating systems, and net pens or cages. A.A.A.2

c Identify and describe the following parts of a recirculating aquaculture system (RAS): tank, sump or reservoir, pump, solid waste filter, U/V sterilizer, heat exchanger, biofilter, and aeration. A.A.A.3

d Describe how the biofilter of a recirculating aquaculture system (RAS) converts ammonia to nitrite, and nitrite to nitrate. A.A.A.4

e Explain how aquaponics can be utilized to enhance sustainable aquaculture practices by reducing water consumption and waste production. A.A.A.5

f Identify and describe how the following environmental factors impact aquaculture production: temperature, salinity, ammonia, nitrate, nitrite, dissolve oxygen, and pH. A.A.A.6

g List and describe the following symptoms: pop-eyes, piping, flashing, fin erosion, abnormal behavior, and skin abnormalities such as lesions and scale loss. A.A.A.7

h List and define the categories of infectious diseases: bacterial, fungal, viral, and parasitic. A.A.A.8

i List and define the categories of non-infectious diseases: nutritional, environmental, chemical, and physiological. A.A.A.9

j Describe the reasons for grading both before and during harvesting. A.A.A.10

k List and describe how the following species are detrimental to aquaculture production: sea stars, oyster drills, zebra mussels, lice, parasitic copepods, and worms. A.A.A.11

l Identify the following external morphological features of a finfish: dorsal, pectoral, pelvic, anal, caudal and adipose fins, lateral line, and operculum. A.A.A.12

m Identify the following external morphologic features of a crustacean: carapace, abdomen, walking legs, and claws. A.A.A.13

n Diagram the life cycle of tilapia, Atlantic salmon, eastern oysters, and American lobsters. A.A.A.14

o List and describe the following nutritional requirements in aquaculture production: proteins, carbohydrates, fats, vitamins, and minerals. A.A.A.15

p Describe free access feeding with demand feeders, versus schedule feeding by hand or automated feeder. A.A.A.16

q Describe the function of the following agencies as related to aquaculture: NOAA, DEEP, EPA, World Aquaculture Society, SeaGrant, FDA, USDA, Army Corps of Engineers, and United States Coast Guard. A.A.A.17

2 **Safety with Agricultural Chemicals: Understand the concepts and procedures for handling, usage, and storage of agricultural chemicals.** A.A.B

a Identify the following from the label of an agricultural chemical container: appropriate use, warning signs, signal words, precautionary statements, EPA Registration Number, directions for use, storage, and disposal. A.A.B.18

b Identify the following from a Safety Data Sheets (SDS): first aid measures, firefighting measures, handling and storage, and personal protection equipment (PPE). A.A.B.19

3 **Career Exploration and Development: Understand the diversity of careers related to the agricultural industry and strategies to acquire and advance in an agricultural career.** A.A.C

a Identify 21st century skills required for all careers in agriculture. A.A.C.20

b Demonstrate the essential skills that are part of a job search, including preparing the cover letter, resume, application, and participating in the interview process. A.A.C.21

c Explain the purpose and types of Supervised Agriculture Experience programs (SAE). A.A.C.22

4 **Leadership, Personal Growth, and Career Success: Understand the concepts, strategies, and tools needed, which contribute to premier leadership, personal growth, and career success through the participation in FFA.** A.A.D

a Identify FFA opportunities, including individual and chapter awards, career development events, leadership skills development, and FFA service engagement. A.A.D.23

b Explain the purpose of using parliamentary procedure in FFA meetings. A.A.D.24

c Demonstrate knowledge of parliamentary procedures such as use of the gavel, making and amending main motions, debating, and voting. A.A.D.25

d Exhibit the skills needed to lead a meeting or activity that engages all participants in the process. A.A.D.26

Natural Resources and Environmental A.NR

1 **Natural Resources and Environmental Technologies: Understand the concepts and skills necessary related to natural resources and environmental management.** A.NR.A

- a Define and identify the following renewable resources: water, trees, fish, wildlife, sunlight, and air. A.NR.A.1
- b Define and identify the following non-renewable resources: minerals, soil, and fossil fuels. A.NR.A.2
- c Define threatened, endangered, and extinct in terms of wildlife. A.NR.A.3
- d Identify the ecosystem structure in terms of food web, biodiversity, and carrying capacity. A.NR.A.4
- e Identify the following habitat types in Connecticut: deciduous forest, coniferous forest, wetland, field or meadow, tidal marsh, and edge. A.NR.A.5
- f Define point source and non-point source pollution. A.NR.A.6
- g Define and describe the principal functions of a watershed. A.NR.A.7
- h Define invasive species and describe their impact on the New England environment. A.NR.A.8
- i Describe the process of ecological succession in New England. A.NR.A.9
- j Describe how laws can be used as a fish and wildlife management technique in New England. A.NR.A.10
- k Identify the following components of a topographical map: contour lines, wetlands, buildings, compass, and scale. A.NR.A.11
- l Describe basic applications of global positioning systems in natural resources. A.NR.A.12
- m Identify recreational uses of natural resources in New England. A.NR.A.13
- n Identify the following water quality indicators: pH, temperature, nitrates, nitrites, ammonia, dissolved oxygen, and turbidity. A.NR.A.14
- o Demonstrate use of a dichotomous key to identify trees, fish, and wildlife. A.NR.A.15
- p Identify the following tools in natural resources: GPS unit, diameter tape, telemetry unit, seines, aquatic net, water meter, animal tag or band, Biltmore stick, Secchi disk, analog refractometer, and hydrometer. A.NR.A.16

---

2 **Identify the following tools in natural resources: GPS unit, diameter tape, telemetry unit, seines, aquatic net, water meter, animal tag or band, Biltmore stick, Secchi disk, analog refractometer, and hydrometer.** A.NR.B

- a Identify the following from the label of an agricultural chemical container: appropriate use, warning signs, signal words, precautionary statements, EPA Registration Number, directions for use, storage, and disposal. A.NR.B.17
- b Identify the following from a Safety Data Sheets (SDS): first aid measures, firefighting measures, handling and storage, and personal protection equipment (PPE). A.NR.B.18

3 **Career Exploration and Development: Understand the diversity of careers related to the agricultural industry and strategies to acquire and advance in an agricultural career.** A.NR.C

- a Identify 21st century skills required for all careers in agriculture. A.NR.C.19
- b Demonstrate the essential skills that are part of a job search, including preparing the cover letter, resume, application, and participating in the interview process. A.NR.C.20
- c Explain the purpose and types of Supervised Agriculture Experience programs (SAE). A.NR.C.21

4 **Leadership, Personal Growth, and Career Success: Understand the concepts, strategies, and tools needed, which contribute to premier leadership, personal growth, and career success through the participation in FFA.** A.NR.D

- a Identify FFA opportunities, including individual and chapter awards, career development events, leadership skills development, and FFA service engagement. A.NR.D.22
- b Explain the purpose of using parliamentary procedure in FFA meetings. A.NR.D.23
- c Demonstrate knowledge of parliamentary procedures such as use of the gavel, making and amending main motions, debating, and voting. A.NR.D.24
- d Exhibit the skills needed to lead a meeting or activity that engages all participants in the process. A.NR.D.25

Plant Science A.PS

1 Plant Science: Understand the concepts and skills necessary related to plant science technology. A.PS.A

- a Identify and describe the function(s) of the following plant parts: leaf, blade, petiole, flower, stamen, pistil, stem, nodes, roots, and root hairs. A.PS.A.1
- b Identify the genus and species (specific epithet), cultivar, and variety of a scientific plant. A.PS.A.2
- c Explain requirements necessary for photosynthesis to occur and identify the products and by-products of photosynthesis. A.PS.A.3
- d Describe how soil texture affects drainage and plant growth. A.PS.A.4
- e Describe the following components of growing media: perlite, vermiculite, and peat. A.PS.A.5
- f Describe soil pH and its effect on plant growth. A.PS.A.6
- g Identify the following from a label of a fertilizer container: percentage of N, P, and K, and calculate the actual amount of the nutrient(s) in the container. A.PS.A.7
- h Describe the role of N, P, and K in regards to vegetative growth, root development, seed production, and plant stress. A.PS.A.8
- i Explain the life cycle of annuals, biennials, and perennial plants. A.PS.A.9
- j Describe asexual propagation techniques by cuttings, division, grafting, and tissue culture. A.PS.A.10
- k Describe the process of plant pollination and fertilization. A.PS.A.11
- l Describe favorable conditions for germination. A.PS.A.12
- m Identify advantages and disadvantages of hybrid plants. A.PS.A.13
- n Describe Integrated Pest Management (IPM) strategies. A.PS.A.14
- o Explain how greenhouses promote plant growth through light, air movement, temperature, and humidity control. A.PS.A.15
- p Explain focal point, balance, proportion, and scale as they are applied to floral design. A.PS.A.16
- q Demonstrate appropriate conditioning and storage of cut flowers. A.PS.A.17
- r Select and safely use the following hand tools and equipment in the landscape industry: garden rake, leaf rake, shovel, spade, hand shears, loppers, rotary spreader, and drop spreader A.PS.A.18

B. Safety with Agricultural Chemicals: Understand the concepts and procedures for handling, usage, and storage of agricultural chemicals. A.PS.B

- a Identify the following from the label of an agricultural chemical container: appropriate use, warning signs, signal words, precautionary statements, EPA Registration Number, directions for use, storage, and disposal. A.PS.B.19
- b Identify the following from a Safety Data Sheets (SDS): first aid measures, firefighting measures, handling and storage, and personal protection equipment (PPE). A.PS.B.20

3 **Career Exploration and Development: Understand the diversity of careers related to the agricultural industry and strategies to acquire and advance in an agricultural career.** A.PS.C

- a Identify 21st century skills required for all careers in agriculture. A.PS.C.21
- b Demonstrate the essential skills that are part of a job search, including preparing the cover letter, resume, application, and participating in the interview process. A.PS.C.22
- c Explain the purpose and types of Supervised Agriculture Experience programs (SAE). A.PS.C.23

4 **Leadership, Personal Growth, and Career Success: Understand the concepts, strategies, and tools needed, which contribute to premier leadership, personal growth, and career success through the participation in FFA.** A.PS.D

- a Identify FFA opportunities, including individual and chapter awards, career development events, leadership skills development, and FFA service engagement. A.PS.D.24
- b Explain the purpose of using parliamentary procedure in FFA meetings. A.PS.D.25
- c Demonstrate knowledge of parliamentary procedures such as use of the gavel, making and amending main motions, debating, and voting. A.PS.D.26
- d Exhibit the skills needed to lead a meeting or activity that engages all participants in the process. A.PS.D.27