

MNLA Certification Manual Learning Objectives

Chapter 5. Laws, Regulations, Guides, Ethics, and Professionalism

- A. Demonstrate knowledge of Federal, State, and Local Regulations pertaining to the Nursery Industry.
- B. Identify professional and ethical practices for the Nursery Industry.
- C. Demonstrate knowledge of MNLA's Constitution and Bylaws.

Chapter 6. Environmental Management

- A. Describe ecological issues associated with maintaining a sustainable landscape.
- B. Explain when and how fertilizers and pesticides may pose a threat to the environment and how they benefit the environment.
- C. Explain why water, soil, and energy conservation are important.
- D. Explain relative aggressiveness versus invasiveness of plants versus noxious weeds.
- E. Explain Federal, State, and Local Regulations of noxious weeds.

Chapter 7. Occupational Health and Safety

- A. Identify and describe safety practices in the workplace.
- B. Identify and explain the symptoms of occupational health hazards.
- C. Identify and explain actions to take and actions to avoid during emergency situations.

Chapter 8. Shipping and Handling

- A. Describe how Bare Root, Container and B&B products should be handled while being transported.
- B. Identify which Federal Plant Pest Quarantines affect Minnesota.
- C. Describe procedures required for shipment of plant material into the state.

Chapter 9. American Standard for Nursery Stock

- A. Describe common techniques for measuring Bare Root, Container and B&B plants.
- B. Explain common techniques for specifying and stating the size of plants.
- C. Explain common techniques for determining the proper relationship between height and caliper, or height and width.
- D. Explain common techniques for determining whether a root ball or container is large enough for a particular size plant.

Chapter 10. Nursery and Landscape Associations (No learning objectives needed)

Chapter 11. Plant Nomenclature and Classification

- A. Explain the need for a universal nomenclature system.
- B. Describe the binomial nomenclature system.
- C. Describe various systems for classification of plants.

Chapter 12. Plant Structure

- A. Describe various plant organs and how they are used as a basis for classifying plants.
- B. Explain the structural differences between dicot and monocot stems.
- C. Identify and describe the reproductive structures of plants.
- D. Explain the functions of plant structures.

Chapter 13. Plant Growth and Development

- A. Describe specific growth processes – photosynthesis, respiration, transpiration, translocation, and absorption – and their roles in plant growth and development.
- B. Identify and describe the stages of plant growth.
- C. Explain the role of plant hormones in plant growth and development.

Chapter 14. Plant Cold Hardiness and Winter Protection

- A. Explain plant cold hardiness physiology.
- B. Identify and describe the types of winter injury.
- C. Describe production and cultural practices employed to avoid winter cold injury.

Chapter 15. Annual Flowers

- A. Explain what is involved in an annual completing its life cycle in one year.
- B. Identify and explain the requirements for light, soil and nutrition in annual plants.
- C. Identify annual plant diseases and insect pests and their control.
- D. Describe advantages and disadvantages of growing annuals.
- E. Explain characteristics of annual plants that make them suitable for specific landscape uses.

Chapter 16. Fruit Trees and Small Fruits

- A. Identify the planting and cultural requirements for growing Fruit Trees.
- B. Explain why and how pruning of Fruit trees may differ from pruning shade trees.
- C. Recommend varieties of tree fruits and small fruits appropriate for specific environmental or edaphic sites.
- D. Identify and understand terms associated with fruit quality characteristics.

Chapter 17. Ground Covers

- A. Identify specific landscape circumstances in which groundcovers are effective.
- B. Identify appropriate ground cover plants that provide specific landscape solutions.
- C. Identify and describe installation and cultural practices for growing groundcovers.

Chapter 18. Herbaceous Perennials

- A. Explain the planting and maintenance requirements of perennial plants.
- B. Identify the bloom season, color and size of commonly used perennials.
- C. Explain the pruning requirements of perennials in production and in the landscape.
- D. Identify and explain the propagation methods used for most perennial plants.
- E. Describe the advantages and disadvantages of growing perennials commercially and in the landscape.

Chapter 19. Indoor Flowering and Foliage Plants

- A. Describe the various light requirements of indoor plants including examples of plants in each light level.
- B. Describe the cultural requirements for growing indoor plants.
- C. Identify and explain plant issues specific to indoor plants.

Chapter 20. Landscape Grasses

- A. Identify specific landscape circumstances in which grasses are effective.
- B. Describe the culture, growth habits, life cycle, flowering and color of specific landscape grasses.
- C. Explain hardiness issues and winter-care of landscape grasses.

Chapter 21. Roses

- A. Explain the difference between hybrid tea roses and hardy shrub roses and their culture.
- B. Identify the best varieties of roses for various planting sites.
- C. Explain how to plant a hybrid tea rose and a shrub rose and explain the differences in fertilizer requirements, insect and disease control, and their preparation for winter.

Chapter 22. Trees, Shrubs, and Woody Vines

- A. Describe the differences between invasive and non-invasive species and explain the significance of this to the industry.
- B. Describe the differences between gymnosperms and angiosperms and provide examples of each.
- C. Identify the factors considered when selecting plant material for specific sites.
- D. Identify which plants will thrive in various environmental and edaphic sites.
- E. Identify trees shrubs and vines via specific plant characteristics in their growing and dormant stages.

Chapter 23. MNLA Certification Plant Identification Resource

- A. Explain the importance of genus, species and variety in plant classification.
- B. Identify the plants in the photo Plant Identification Resource CD.
- C. Explain the USDA Plant Hardiness Zones and the reasons for their use.

Chapter 24. MNLA Plant Material and Landscape References

- A. Identify the symbols that provide quick reference of trees & shrubs performance.
- B. Identify plants in the perennial reference that include fragrance, butterfly & humming bird attraction, and cut flowers.
- C. Identify sources of colorful elements that can be added to the landscape garden.

Chapter 25. Soils for Nursery and Landscape Management

- A. Identify and describe the components of soil.
- B. Explain what soil structure is and its effect on plants.
- C. Explain what soil texture is and its effect on plants.
- D. Explain what compaction is and its effect on soil structure and plant growth.
- E. Identify and describe the reasons for, the effects of, the benefits of, any problems incurred, and the conditions for, adding amendments to soils.
- F. Explain the optimum pH ranges for plants and explain why they are optimum.
- G. Identify and explain the benefits, problems and conditions associated with adding amendments to soil.

Chapter 26. Fertilization for Nursery and Landscape Management

- A. Identify and describe what nutrient elements are required for plant growth and the magnitude and form in which they are absorbed.
- B. Explain the function of nutrient elements in the plant and their symptoms of excess and deficiency.
- C. Explain the fertilizer label, application rates, equipment calibration and the types of fertilizer to apply for specific uses.
- D. Describe why a soil test may be a good indicator of what plants in a field or landscape require, and why it may not be a good indicator.
- E. Describe how to obtain a meaningful soil sample.

Chapter 27. Planting and Transplanting

- A. Identify the factors which indicate what plants should be planted in various sites.
- B. Describe the different types of packaging required for plants including Bare Root, Packaged, Field-potted, Container Grown, Containerized, Balled & Burlapped, and Spaded, and explain their application in the industry.
- C. Explain the details of the Gopher State 1 System and explain why it is important and by whom it is administered.
- D. Explain why planting depth is critical and describe the proper planting procedure for Bare Root and B&B plants.

Chapter 28. Irrigation Management

- A. Explain the water requirements of plants in general and identify the water requirements of some specific plants.
- B. Identify the various types of Irrigation systems and describe their application in the industry.
- C. Explain uniformity of irrigation application, why it is important and how is it achieved.
- D. Explain how to determine water stress in plants, both drought and over-watering, and describe corrective measures.

Chapter 29. Pruning Trees, Shrubs, Evergreens, and Perennials in the Nursery & Landscape

- A. Describe the horticultural practices involved in the science and art of pruning.
- B. Identify the key principles of pruning and describe the proper methods for removing branches.
- C. Identify the proper pruning time of trees, shrubs, and evergreens, and the reasons why.
- D. Describe the relationship between pruning and plant diseases including specific examples.

Chapter 30. Landscape Management

- A. Describe the major components and responsibility of general landscape management.
- B. Explain the diagnostic procedures used in landscape management.
- C. Identify and describe several plant problems, their possible causes, and their potential control or corrective procedures.

Chapter 31. Professional Gardener

- A. Identify the areas one must be knowledgeable in to be a professional gardener.
- B. Describe the seasonal timelines and activities of a professional gardener.
- C. Identify garden maintenance requirements of a professional gardener.

Chapter 32. Turf Management

- A. Identify turfgrasses suitable for various sites for lawns in Minnesota and why they're applicable.
- B. Describe how to determine if a lawn should be established by seeding or sodding and describe the procedures for each.
- C. Explain how to maintain turfgrass including, but not limited to, mowing, fertilizing, irrigation, aerification, thatch control, weed control, disease control, and insect control.

Chapter 33. Garden Center Plant Management

- A. Identify and explain the factors that influence the customer's decision to shop at a certain garden center.
- B. Describe the importance of high quality plant material and explain how to provide a "Production Mode" to maintain quality plants.
- C. Describe the potting, packaging, labeling, displaying, and over-wintering of plant material and how to promote plants throughout the selling season.

Chapter 34. Vegetables

- A. Identify and describe vegetable types and their culture requirements including their approximate crop production timing schedules.
- B. Identify and explain site and soil preparations for a vegetable garden including raised beds and container gardening.
- C. Identify and explain fertility requirements and pest control measures for vegetable gardens of all types.
- D. Describe warm and cold season crops and identify examples of each for various locations in Minnesota.

Chapter 35. Water Gardens

- A. Identify and describe different types of ponds and water features.
- B. Identify and describe materials, both synthetic and natural, used in pond construction.
- C. Describe the nitrogen cycle of a pond and explain how to obtain a balanced ecosystem.
- D. Identify and describe appropriate plants for different types of ponds.
- E. Explain the basics of water-garden maintenance.

Chapter 36. Pesticide Management

- A. Describe IPM and PHC and explain why they are important.
- B. Describe Pesticides relative to their toxicity, their formulation and their chemical class.
- C. Describe Pesticide Labels, Laws, and Regulations, and explain their impact and importance.
- D. Understand the meaning of all Pesticide Terminology.
- E. Describe Pesticide mixing, application and storage.
- F. Describe chronic and acute toxicity and explain their importance.
- G. Describe general safety rules and how to prevent toxic exposure and accidents.
- H. Identify some of the signs and symptoms of poisoning and their treatment.

Chapter 37. Disease Management

- A. Identify and explain the categories of plant diseases.
- B. Explain the concept of what a disease is and describe the details of what is required to cause a plant disease.
- C. Explain the need for correct identification of the causal agent of a plant disease and describe the factors in diagnosing a plant disease.
- D. Identify certain diseases that are specific to specific plants and explain their control.
- E. Identify and explain the numerous cultural practices effective in the control of plant diseases.
- F. Identify and describe the causal agents of plant diseases and explain how they differ from each other.

Chapter 38. Insect Management

- A. Identify and describe the types of insect damage and how they are diagnosed.
- B. Identify specific insects that infest specific plants.
- C. Identify and explain the conditions and factors that can lead to insect infestations.
- D. Describe host plant resistance and explain why it is important.
- E. Describe biological control and explain when it may or may not be effective.
- F. Identify and define the categories of insecticides and explain when and how they should be used.
- G. Explain the concept of degree days and describe how this concept is used to predict pest activity.
- H. Identify and describe which insecticides control what insects or groups of insects.

Chapter 39. Weed Management

- A. Describe the various types of weeds.
- B. Explain the proper site preparation relative the control of weeds with and without herbicides.
- C. Identify and describe various types of weed control.
- D. Describe the classification of herbicides and explain when each should be used and how they should be used.
- E. Identify specific herbicides in all categories and which weeds they will control.
- F. Describe the herbicide label and explain why it is important.
- G. Identify specific herbicides that can be used on what crops and which herbicides may cause injury to what plants.

Chapter 40. Plant Propagation

- A. Identify and describe the types of propagation and the methods used to propagate plants.
- B. Understand seed dormancy and how treat seeds for the different types of dormancy.
- C. Describe the various types of propagation facilities including their requirements and advantages and disadvantages of each.

Chapter 41. Container Production

- A. Identify container media components and explain the function of each.
- B. Describe how the shape of container is important and its effect on plant growth.
- C. Explain the need and the process of media testing and analysis.
- D. Identify and describe the chemical properties of container media.
- E. Identify and describe the physical properties of container media.
- F. Explain media porosity and aeration and how they are controlled.
- G. Identify various irrigation requirements and methods for container plants.
- H. Identify and describe the cultural practices involved in container plant production.

Chapter 42. Field Production of Nursery Crops

- A. Understand and describe the proper soil preparation for field production.
- B. Identify and describe the cultural practices involved in field production of woody and perennial plants.
- C. Explain the importance of field fertility, the process of soil sampling and the application of fertilizer.
- D. Identify and explain the specific issues of field production relative to the type of plants harvested.
- E. Describe terminal versus caliper growth and how they are affected by pruning and staking.
- F. Identify and explain the proper pruning practices for field-grown nursery crops.

Chapter 43. Floricultural Production and Management

- A. Explain the physiology of flower develop in plants.
- B. Describe the importance and management of Day length in the production of Floricultural crops.
- C. Describe the types of greenhouse structures and their component parts.
- D. Describe the cultural and management practices for the production of floricultural crops.
- E. Identify plant growth regulators and explain the role and effect of various products used in Floricultural production.

Chapter 44. Landscaper Design

- A. Explain sustainability and describe why it is important to landscape design.
- B. Identify and describe the key landscape design objectives.
- C. Explain and describe the base plan requirements and sequence for completion.
- D. Identify and describe the principles and elements of design.

Chapter 45. Landscape Contracting

- A. Identify and describe the major components required in landscape contracting.
- B. Identify and describe potential problem areas of landscape contracting.
- C. Identify and describe what is required in successful landscape bidding.

Chapter 46. Hardscape Construction

- A. Explain the importance of local and state government building code requirements in Hardscape installation projects.
- B. Describe the construction process for installing paver walkways, driveways, and patios.
- C. Explain the angle of repose and engineering requirements for building retaining walls.
- D. Explain the environmental advantages of using permeable pavers when installing sidewalks, patios, and driveways.
- E. Identify and describe the general terminology involved in Hardscape Construction.

Chapter 47. Garden Center Management

- A. Explain the importance of garden center management of people, products, and services.
- B. Identify and explain internal and external customers.
- C. Describe the importance of management policies and standards in the Garden Center.
- D. Explain the need for implementing a "Production Mode" in the Garden Center.

Chapter 48. Marketing, Merchandising, and Sales

- A. Identify and describe various consumer age marketing subcultures.
- B. Explain the differences between cost and value, and why these are important.
- C. Identify and describe the types of communications businesses use to obtain customers.
- D. Explain and identify the goals of display selling and maintenance.
- E. Identify and describe the guidelines used to establish customer traffic flow in the Garden Center.
- F. Identify and describe successful types of Garden Center displays.
- G. Identify and describe the components of true selling.
- H. Identify and describe the personalities and qualities of successful sales people.
- I. Identify and explain the various approaches to successful sales.
- J. Explain the need for uniform laws and regulations in marketing container plants.
- K. Describe the legal information and labeling required to market container plants.
- L. Identify and explain the requirements for label variation for different types of labels.