Polk County Property Appraiser

Agricultural Classification Guidelines
Contents

Chapter 1. What is Agricultural (Ag) Classification? _______________________________ 4
  Definition ____________________________________________________________ 4
  Legislative Intent ______________________________________________________ 5

Chapter 2. Qualifying for Ag Classification _______________________________________ 6
  Florida Statute 193.461 (The Greenbelt Law) ________________________________ 6
  Florida Statute 193.451 (Annual Growing of Ag Crops) ________________________ 10
  Florida Statute 823.14 (Florida Right to Farm Act) ____________________________ 11
  Use of the Land is the Guidepost _________________________________________ 13

Chapter 3. Types of Agricultural Operations ____________________________________ 14
  Citrus ______________________________________________________________ 14
  Pasture _____________________________________________________________ 14
  Timber _____________________________________________________________ 14
  Hay Production ______________________________________________________ 14
  Sod ________________________________________________________________ 15
  Crops ______________________________________________________________ 15
  Nursery ____________________________________________________________ 15
  Goat Farm __________________________________________________________ 15
  Horses ______________________________________________________________ 15

Chapter 4. Applying for Ag Classification _______________________________________ 16
  New Applicants ______________________________________________________ 16
  Renewals ___________________________________________________________ 17
  Late Files ___________________________________________________________ 17
  Value Adjustment Board (VAB) __________________________________________ 17

Chapter 5. Removal of Ag Classification ________________________________________ 18

Chapter 6. Agricultural Land Appraisal Guidelines _______________________________ 19
  Criteria for ALL Agricultural Operations ____________________________________ 19
  Guidelines for Specific Agricultural Operations ______________________________ 20
  Citrus ____________________________________________________________________ 20
  Pasture __________________________________________________________________ 21
  Nursery __________________________________________________________________ 22
  Goat Farm __________________________________________________________________ 22
  Hay Production __________________________________________________________________ 23
  Hay Establishment Practices __________________________________________________________________ 24
  Hay Production Criteria for Platted Residential or Commercial Subdivisions ____________ 25
  Timber ____________________________________________________________________ 26
  Sod ____________________________________________________________________ 27
  Crops __________________________________________________________________ 27
  Horses __________________________________________________________________ 28
  Miscellaneous __________________________________________________________________ 29
Chapter 7. Agricultural Land Review Cycle _____________________________________ 30
  Agricultural Land Monthly Departmental Responsibilities ___________________ 30
  Agricultural Land Appraisal Cycles________________________________________ 31
  Citrus Reappraisal ______________________________________________________ 31
  Farmland Reappraisal ___________________________________________________ 33
  Pasture Reappraisal _____________________________________________________ 34

Chapter 8. Citrus Health Response Program (CHRP) _____________________________ 35

Appendix A ________________________________________________________________ 40
  AG 51 CROPLAND ______________________________________________________ 40
  AG 54 TIMBER _________________________________________________________ 40
  AG 60 PASTURE ________________________________________________________ 41
  AG 66 CITRUS _________________________________________________________ 41
  AG 67 POUlTRY, BEES, FISH, RABBITS _________________________________ 42
  AG 68 DAIRY _________________________________________________________ 42
  AG 69 ORNAMENTAL __________________________________________________ 43

Appendix B: Hay Production in Florida ______________________________________ 44
Appendix C: Bermudagrass Production in Florida _____________________________ 50
Appendix D: Bahiagrass - Overview and Management ___________________________ 57
Appendix E: Resolution 09-099 _____________________________________________ 66
Appendix F: Section 222 Agriculture (Polk County) ____________________________ 67
Appendix G: Land Development Code – City of Frostproof ______________________ 73
Appendix H: Case Law ____________________________________________________ 80
CHAPTER 1

What is Agricultural (Ag) Classification?

Definition

Agricultural valuation is a special use appraisal for land that is devoted primarily to agricultural production. The value of land classified as Ag land does not constitute an exemption, although the classification can lower the assessed value of land and consequently the amount of taxes owed.

An Agricultural Classification, more commonly known as "Greenbelt", is a classification of different types of agricultural property such as timber, pasture, groves and nursery, etc.

Only lands primarily used for bona fide agricultural purposes shall receive an Agricultural Classification. "Bona fide agricultural purposes" means a good faith commercial agricultural use of the land.

January 1st of each year is the effective assessment date. Therefore, the subject property must be used for the intended classification on or before this date, or a reasonable effort must have been made to place the property in agriculture classified use.

It is the responsibility of the owner to establish and prove an agricultural operation. The Property Appraiser's staff cannot suggest or recommend to the owner what venture to begin or continue.
Legislative Intent

It is the declared policy of the State of Florida to conserve, protect and encourage the development and improvement of its agricultural lands for the production of food and other agricultural products and as valued natural and ecological resources for clean air water sheds wildlife habitat and other benefits of green space, including aesthetic purposes.

The Legislature has also declared that Florida's economic and environmental future is enhanced by a tax policy which encourages sustainable agricultural use of its lands and discourages pressures to otherwise develop the land in indiscriminate manners, which brings conflicting land uses into juxtaposition, urban sprawl and creates higher costs for public services.

The intent of the Greenbelt Law is to provide a means by which agricultural land may be protected and enhanced as a viable segment of the state's economy and as an economic and environmental resource of major importance.
CHAPTER 2

Qualifying for Ag Classification

For land to be granted agricultural classification, the use of the land must be primarily for bona fide commercial agriculture.

The agricultural use must be “commercial,” which has been defined as making a profit or having the intent to make a profit. It is not necessary, however, to have the expectation of meeting the investment costs of the land and realizing a profit overall to be “commercial”. Nevertheless, it is not enough to grow fruit or vegetables for your own use or keep a pet cow or your own horses for pleasure or sport.

The agricultural use must be “bona fide.” This means good faith commercial agricultural use of the land.

Florida Statute 193.461 (The Greenbelt Law)

(3)(a) No lands shall be classified as agricultural lands unless a return is filed on or before March 1 of each year. The property appraiser, before so classifying such lands, may require the taxpayer or the taxpayer’s representative to furnish the property appraiser such information as may reasonably be required to establish that such lands were actually used for a bona fide agricultural purpose. Failure to make timely application by March 1 shall constitute a waiver for 1 year of the privilege herein granted for agricultural assessment. However, an applicant who is qualified to receive an agricultural classification who fails to file an application by March 1 may file an application for the classification and may file, pursuant to s. 194.011, a petition with the value adjustment board requesting that the classification be granted. The petition may be filed at any time during the taxable year on or before the 25th day following the mailing of the notice by the property appraiser as provided in s. 194.011.

Notwithstanding the provisions of s. 194.013, the applicant must pay a nonrefundable fee of $15 upon filing the petition. Upon reviewing the petition, if the person is qualified to receive the classification and demonstrates particular extenuating circumstances judged by the property appraiser or the value adjustment board to warrant granting the classification, the property appraiser or the value adjustment board may grant the classification. The owner of land that was classified agricultural in the previous year and whose ownership or use has not changed may reapply on a short form as provided by the department. The lessee of property may make original application or reapply using the short form if the lease, or an affidavit executed by the owner, provides that the lessee is empowered to make application for the agricultural classification on behalf of the owner and a copy of the lease or affidavit accompanies the application. A county may, at the request of the property appraiser and by a majority vote of its governing body, waive the requirement that an annual application or statement be made for classification of property within the county after an initial application is made and the
classification granted by the property appraiser. Such waiver may be revoked by a majority vote of the governing body of the county.

(b) Subject to the restrictions specified in this section, only lands that are used primarily for bona fide agricultural purposes shall be classified agricultural. The term "bona fide agricultural purposes" means good faith commercial agricultural use of the land.

1. In determining whether the use of the land for agricultural purposes is bona fide, the following factors may be taken into consideration:
   a. The length of time the land has been so used.
   b. Whether the use has been continuous.
   c. The purchase price paid.
   d. Size, as it relates to specific agricultural use, but a minimum may not be required for agricultural assessment.
   e. Whether an indicated effort has been made to care sufficiently and adequately for the land in accordance with accepted commercial agricultural practices, including, without limitation, fertilizing, liming, tilling, mowing, reforesting, and other accepted agricultural practices;
   f. Whether the land is under lease and, if so, the effective length, terms, and conditions of the lease.
   g. Such other factors as may become applicable.

2. Offering property for sale does not constitute a primary use of land and may not be the basis for denying an agricultural classification if the land continues to be used primarily for bona fide agricultural purposes while it is being offered for sale.

(c) The maintenance of a dwelling on part of the lands used for agricultural purposes shall not in itself preclude an agricultural classification.

(d) When property receiving an agricultural classification contains a residence under the same ownership, the portion of the property consisting of the residence and curtilage must be assessed separately, pursuant to s. 193.011, to qualify for the assessment limitation set forth in s. 193.155. The remaining property may be classified under the provisions of paragraphs (a) and (b).

(e) Notwithstanding the provisions of paragraph (a), land that has received an agricultural classification from the value adjustment board or a court of competent jurisdiction pursuant to this section is entitled to receive such classification in any subsequent year until such agricultural use of the land is abandoned or discontinued, the land is diverted to a nonagricultural use, or the land is reclassified as nonagricultural pursuant to subsection (4). The property appraiser must, no later than January 31 of each year, provide notice to the owner of land that was classified...
agricultural in the previous year informing the owner of the requirements of this paragraph and requiring the owner to certify that neither the ownership nor the use of the land has changed. The department shall, by administrative rule, prescribe the form of the notice to be used by the property appraiser under this paragraph. If a county has waived the requirement that an annual application or statement be made for classification of property pursuant to paragraph (a), the county may, by a majority vote of its governing body, waive the notice and certification requirements of this paragraph and shall provide the property owner with the same notification provided to owners of land granted an agricultural classification by the property appraiser. Such waiver may be revoked by a majority vote of the county’s governing body. This paragraph does not apply to any property if the agricultural classification of that property is the subject of current litigation.

(4)(a) The property appraiser shall reclassify the following lands as non-agricultural:

1. Land diverted from an agricultural to a non-agricultural use.
2. Land no longer being utilized for agricultural purposes.
3. Land that has been zoned to a non-agricultural use at the request of the owner subsequent to the enactment of this law.

(b) The board of county commissioners may also reclassify lands classified as agricultural to non-agricultural when there is contiguous urban or metropolitan development and the board of county commissioners finds that the continued use of such lands for agricultural purposes will act as a deterrent to the timely and orderly expansion of the community.

(c) Sale of land for a purchase price which is three or more times the agricultural assessment placed on the land shall create a presumption that such land is not used primarily for bona fide agricultural purposes. Upon a showing of special circumstances by the landowner demonstrating that the land is to be continued in bona fide agriculture, this presumption may be rebutted.

(5) For the purpose of this section, “agricultural purposes” includes, but is not limited to, horticulture; floriculture; viticulture; forestry; dairy; livestock; poultry; bee; pisciculture, when the land is used principally for the production of tropical fish; aquaculture; sod farming; and all forms of farm products as defined in s. 823.14 and farm production.

(6)(a) In years in which proper application for agricultural assessment has been made and granted pursuant to this section, the assessment of land shall be based solely on its agricultural use. The property appraiser shall consider the following use factors only:

1. The quantity and size of the property;
2. The condition of the property;
3. The present market value of the property as agricultural land;
4. The income produced by the property;
5. The productivity of land in its present use;
6. The economic merchantability of the agricultural product; and
7. Such other agricultural factors as may from time to time become applicable, which are reflective of the standard present practices of agricultural use and production.

(b) Notwithstanding any provision relating to annual assessment found in s. 192.042, the property appraiser shall rely on 5-year moving average data when utilizing the income methodology approach in an assessment of property used for agricultural purposes.

(c)1. For purposes of the income methodology approach to assessment of property used for agricultural purposes, irrigation systems, including pumps and motors, physically attached to the land shall be considered a part of the average yields per acre and shall have no separately assessable contributory value.

2. Litter containment structures located on producing poultry farms and animal waste nutrient containment structures located on producing dairy farms shall be assessed by the methodology described in subparagraph 1.

3. Structures or improvements used in horticultural production for frost or freeze protection, which structures or improvements are consistent with the Department of Agriculture and Consumer Services’ interim measures or best management practices adopted pursuant to s. 570.085 or s. 403.067(7)(c), shall be assessed by the methodology described in subparagraph 1.

(d) In years in which proper application for agricultural assessment has not been made, the land shall be assessed under the provisions of s. 193.011.

(7) Lands classified for assessment purposes as agricultural lands which are taken out of production by any state or federal eradication or quarantine program shall continue to be classified as agricultural lands for the duration of such program or successor programs. Lands under these programs which are converted to fallow, or otherwise nonincome-producing uses shall continue to be classified as agricultural lands and shall be assessed at a de minimis value of no more than $50 per acre, on a single year assessment methodology; however, lands converted to other income-producing agricultural uses permissible under such programs shall be assessed pursuant to this section. Land under a mandated eradication or quarantine program which is diverted from an agricultural to a nonagricultural use shall be assessed under s. 193.011.

* Offering property for sale does not constitute a primary use of land and may not be the basis for denying an agricultural classification if the land continues to be
used primarily for bona fide agricultural purposes while it is being offered for sale.

**

* In 2008, House Bill 909 amended the statute to state that in no event shall a minimum acreage be required for Ag assessment. [F.S. 193.461 (3)(b)(1)(d)]

** In 2010, House Bill 981 amended the statute to add the following: Offering property for sale does not constitute a primary use of land and may not be the basis for denying an AG classification if the land continues to be used for bona fide AG purposes while it is being offered for sale. [F.S. 193.461 (3)(2)]

Florida Statute 193.451 (Annual Growing of Ag Crops)

The Florida statutes also provide specific information about the value and taxation of agricultural crops:

193.451 Annual growing of agricultural crops, non-bearing fruit trees, nursery stock; taxability.—

(1) Growing annual agricultural crops, non-bearing fruit trees, and nursery stock, regardless of the growing methods, shall be considered as having no ascertainable value and shall not be taxable until they have reached maturity or a stage of marketability and have passed from the hands of the producer and/or offered for sale. This section shall be construed liberally in favor of the taxpayer.

(2) Raw, annual, agricultural crops shall be considered to have no ascertainable value and shall not be taxable until such property is offered for sale to the consumer.

(3) Personal property leased or subleased by the Department of Agriculture and Consumer Services and utilized in the inspection, grading, or classification of citrus fruit shall be deemed to have value for purposes of assessment for ad valorem property taxes no greater than its market value as salvage. It is the expressed intent of the Legislature that this subsection shall have retroactive application to December 31, 2003.

It is the declared policy of the State of Florida to conserve, protect and encourage the development and improvement of its agricultural lands for the production of food and other agricultural products and as valued natural and ecological resources for clean air sheds, wildlife habitat and other benefits of green space, including aesthetic purposes:
Florida Statute 823.14 (Florida Right to Farm Act)

823.14 Florida Right to Farm Act.—

(1) SHORT TITLE.—This section shall be known and may be cited as the “Florida Right to Farm Act.”

(2) LEGISLATIVE FINDINGS AND PURPOSE.—The Legislature finds that agricultural production is a major contributor to the economy of the state; that agricultural lands constitute unique and irreplaceable resources of statewide importance; that the continuation of agricultural activities preserves the landscape and environmental resources of the state, contributes to the increase of tourism, and furthers the economic self-sufficiency of the people of the state; and that the encouragement, development, improvement, and preservation of agriculture will result in a general benefit to the health and welfare of the people of the state. The Legislature further finds that agricultural activities conducted on farm land in urbanizing areas are potentially subject to lawsuits based on the theory of nuisance and that these suits encourage and even force the premature removal of the farm land from agricultural use. It is the purpose of this act to protect reasonable agricultural activities conducted on farm land from nuisance suits.

(3) DEFINITIONS.—As used in this section:

(a) “Farm” means the land, buildings, support facilities, machinery, and other appurtenances used in the production of farm or aquaculture products.

(b) “Farm operation” means all conditions or activities by the owner, lessee, agent, independent contractor, and supplier which occur on a farm in connection with the production of farm products and includes, but is not limited to, the marketing of produce at roadside stands or farm markets; the operation of machinery and irrigation pumps; the generation of noise, odors, dust, and fumes; ground or aerial seeding and spraying; the application of chemical fertilizers, conditioners, insecticides, pesticides, and herbicides; and the employment and use of labor.

(c) “Farm product” means any plant, as defined in s. 581.011, or animal useful to humans and includes, but is not limited to, any product derived therefrom.

(d) “Established date of operation” means the date the farm operation commenced. If the farm operation is subsequently expanded within the original boundaries of the farm land, the established date of operation of the expansion shall also be considered as the date the original farm operation commenced. If the land boundaries of the farm are subsequently expanded, the established date of operation for each expansion is deemed to be a separate and independent established date of operation.
expanded operation shall not divest the farm operation of a previous established date of operation.

(4) FARM OPERATION NOT TO BE OR BECOME A NUISANCE.—

(a) No farm operation which has been in operation for 1 year or more since its established date of operation and which was not a nuisance at the time of its established date of operation shall be a public or private nuisance if the farm operation conforms to generally accepted agricultural and management practices, except that the following conditions shall constitute evidence of a nuisance:

1. The presence of untreated or improperly treated human waste, garbage, offal, dead animals, dangerous waste materials, or gases which are harmful to human or animal life.

2. The presence of improperly built or improperly maintained septic tanks, water closets, or privies.

3. The keeping of diseased animals which are dangerous to human health, unless such animals are kept in accordance with a current state or federal disease control program.

4. The presence of unsanitary places where animals are slaughtered, which may give rise to diseases which are harmful to human or animal life.

(b) No farm operation shall become a public or private nuisance as a result of a change in ownership, a change in the type of farm product being produced, a change in conditions in or around the locality of the farm, or a change brought about to comply with Best Management Practices adopted by local, state, or federal agencies if such farm has been in operation for 1 year or more since its established date of operation and if it was not a nuisance at the time of its established date of operation.

(5) WHEN EXPANSION OF OPERATION NOT PERMITTED.—This act shall not be construed to permit an existing farm operation to change to a more excessive farm operation with regard to noise, odor, dust, or fumes where the existing farm operation is adjacent to an established homestead or business on March 15, 1982.

(6) LIMITATION ON DUPLICATION OF GOVERNMENT REGULATION.—It is the intent of the Legislature to eliminate duplication of regulatory authority over farm operations as expressed in this subsection. Except as otherwise provided for in this section and s. 487.051(2), and notwithstanding any other provision of law, a local government may not adopt any ordinance, regulation, rule, or policy to prohibit, restrict, regulate, or otherwise limit an activity of a bona fide farm operation on land classified as agricultural land pursuant to s. 193.461, where such activity is regulated through
implemented best management practices or interim measures developed by the Department of Environmental Protection, the Department of Agriculture and Consumer Services, or water management districts and adopted under chapter 120 as part of a statewide or regional program. When an activity of a farm operation takes place within a wellfield protection area as defined in any wellfield protection ordinance adopted by a local government, and the adopted best management practice or interim measure does not specifically address wellfield protection, a local government may regulate that activity pursuant to such ordinance. This subsection does not limit the powers and duties provided for in s. 373.4592 or limit the powers and duties of any local government to address an emergency as provided for in chapter 252.

Use of the Land is the Guidepost

The Property Appraiser is not required to consider all of the factors listed, and a specific factor may not be selected above all others as the sole criteria for determining whether or not the property should be granted the agricultural classification. No one factor, by itself, is determinative. The Courts have ruled, for example, that it is not required that the owner is a farmer or that agricultural use is a permitted use under the local zoning regulations. See Appendix F Section 222 Agriculture (Polk County); Appendix G Land Development Code City of Frostproof.

The Courts have stressed that the “use” of the land as of January 1st of the year in question is the guidepost in classifying the land and that “agricultural use” is now and has always been the test. See Appendix H for case law.
CHAPTER 3

Types of Agricultural Operations

There are many types of agricultural operations in Polk County. Some of the agricultural operations may include more than one type of commodity. Examples of agricultural use include, but are not limited to the following: producing crops for human/animal consumption, cultivation/management of ornamental and flowering plants, cultivation of fruits, vegetables, herbs, and raising/breeding, livestock or other game.

Brief descriptions of the typical agricultural in Polk County are listed below. For more detailed information about the various agricultural operations and the appraisal guidelines used in determining Ag Classification, see Chapter 6 Agricultural Land Appraisal Guidelines.

Citrus

Citrus operations include a variety of fruit types: orange, grapefruit, tangerines, and specialty.

Pasture

Pasture operations include cow/calf, feedlots, and dairy operations. The stocking rate of cattle is based on several factors including: pasture soil quality and size.

Timber

Timber operations vary widely. Operations may produce pulpwood, mulch, chip and saw.

Hay Production

Hay operations grow perennial, improved grasses such as Bahia, Bermuda, and specialty varieties. Soil quality is important in production of hay. These are cut and baled for livestock consumption and/or erosion control for road projects. These grasses are usually baled in the spring and/or fall.
Sod

Sod operations are typically St. Augustine or Bahia grass. St. Augustine grass is primarily grown for landscaping purposes. Bahia grasses are generally used for larger commercial projects, erosion control, or road projects.

Crops

Crop operations are primarily vegetables. Crops also include blueberry, strawberry, and watermelon. Due to the climate in our area, a typical operation may produce two harvests per year.

Nursery

Nursery operations include propagation and sale of ornamental plants, citrus, and trees. A typical nursery can either be in-ground or containerized. They may be in greenhouses, shade houses, or open air.

Goat Farm

Goat farm operations primarily produce milk and meat. Both are sold for human consumption. Some producers breed for wholesale only.

Horses

Horses are limited to breeding. A breeding operation involves having brood mares and either a stud (stallion) on location or using artificial insemination for breeding mares. Land used primarily to train, show, race, ride, or use horses in some other manner not incidental to breeding does not qualify.
CHAPTER 4

Applying for Ag Classification

January 1st is the statutory assessment date; therefore, the property must be in use on this
date or a reasonable effort must have been made, and continues to be made, to place the
property in agricultural use as of January 1st of the given tax year.

These guidelines, while specific, are still “guidelines”. The granting or denying of all or part
of a particular application for Agricultural Classification is a decision made after analyzing
the relevant facts and circumstances of the property. No final decision will be made on an
application for an agricultural classification until all information relating to the application has
been submitted and reviewed, the property has been inspected, and a final analysis of
these factors has been completed. Under no circumstances shall an agricultural
classification be promised to a taxpayer prior to completion of this final analysis, and no
taxpayer is entitled to rely on any representation that his or her property will be granted an
agricultural classification until such time as a final decision has been issued by the Property
Appraiser’s office. Pursuant to Florida Statute 193.461 (1), the property appraiser has the
authority to decide whether a parcel of land is entitled to an agricultural classification.
Pursuant to Florida Statute 193.461 (2), any landowner whose land is denied agricultural
classification by the property appraiser may appeal to the Value Adjustment Board.

New Applicants

If you believe your property, as of January 1 of the current tax year, meets the criteria for
the agricultural classification, you must file an initial application with the Polk County
Property Appraiser’s office by March 1. You may contact the office at 863.534.4777 or
obtain an agriculture application from our website www.polkpa.org.

When you submit your application, please attach as much additional information as possible
to show the use of your land is primarily for bona fide, commercial agriculture. Utilize the
factors listed in the Agricultural Land Appraisal Guidelines chapter for guidance as to what
documentation would assist us in making a correct determination. Such additional
information, if not already provided, may be requested by the Property Appraiser as is
reasonably required in making this determination. Any financial information submitted will be
held confidential by Florida Statutes.

If a property previously granted the agricultural classification has been conveyed, a new
application must be submitted.

If your agricultural classification is denied, we will notify you by mail, postmarked by July 1st.
Renewals

Land that has been previously granted the agricultural classification will be automatically renewed in subsequent years providing the agricultural use of the land has not been abandoned or discontinued, and has not been conveyed. The automatic renewal is subject to property inspections for verification purposes.

Polk County Board of County Commissioners adopted Resolution (09-099) on June 3, 2009 to waive renewal applications and the mailing of agricultural receipt cards. See Appendix E for copy of resolution.

If, however, you have changed from one agricultural use to a different agricultural use, you should notify us promptly so that the agricultural use of your property may be changed accordingly. Ag classifications vary in value of land per acre. You must also notify the Property Appraiser’s office if you have discontinued the agricultural use.

Late Files

If you failed to file by the March 1 filing date deadline, you may late file and file a petition with the Value Adjustment Board (VAB). The absolute deadline to late file for an agricultural classification is the same date as the annual deadline to file a valuation challenge which is noted on the Truth in Millage (TRIM) notice.

All late file applications must be submitted with a petition to the Value Adjustment Board.

Value Adjustment Board (VAB)

If you believe the Property Appraiser’s decision regarding the denial or removal of the agricultural classification is incorrect, you may contact our office at 863.534-4777 for further discussion and review. Taxpayers have the right to contact the Value Adjustment Board and file a petition for a hearing.

*The Property Appraiser would prefer discussion and resolution to avoid the costly process of a VAB hearing. If resolution cannot be obtained then filing a petition is the next step in the process.*

Taxpayers may obtain more information at www.polkcountyclerk.net. A petition must be filed within 30 days of the notice from the Property Appraiser’s office regarding the status of your application or removal of the agricultural classification.
CHAPTER 5

Removal of Ag Classification

The Property Appraiser is responsible for classifying all lands within the county as either agricultural or non-agricultural on an annual basis. Agricultural classification may be removed from the land for various reasons that may include the following:

1. Land diverted from an agricultural to a non-agricultural use.

2. Land no longer being utilized for bona fide commercial agricultural purposes.

3. Land that has been conveyed prior to January 1st without a new agricultural classification application on file.

The removal of the agricultural classification most often occurs during the reappraisal cycle. Each parcel is physically inspected for bona fide commercial use. Operations that appear to be abandoned are removed. Any operation whose commerciality is in question will be requested to submit supporting documentation. Field inspections are conducted as a result of work orders generated in-house that question the agricultural classification. Field checks are conducted when a taxpayer notifies the office of any concerns relating to the agricultural classification. Fraudulent use of the agricultural classification is taken very seriously by this office. All claims/reports are investigated promptly.
CHAPTER 6

Agricultural Land Appraisal Guidelines

Listed below are general guidelines for the review of agricultural classification applications in determining eligibility. These guidelines should not be considered solely determinative. Each application is individually reviewed and physically inspected to determine actual use before the application is approved or denied.

Criteria for ALL Agricultural Operations

1. **Agricultural classification applies to land only** - It does not apply to improvements on land such as barns, storage tanks, and farm or ranch outbuildings. Improvements are valued at market value.

2. **The land must be devoted to agricultural use** - The use must be current, meaning active management is taking place on the land. Land will not qualify simply because “it is rural” or “open land” or because the owner intends to use the land for an agricultural purpose. The land must be in agricultural use as of January 1st or a reasonable effort must have been made to place the property in classified use.

3. **The primary use of the land must be agricultural** - If the land is used for more than one purpose, the acreage is defined in multiple land lines.

4. **The operation should have an expectation of making a profit** – Properties that are granted agricultural classification do not always profit, it is the expectation or intent to be profitable.

5. **Minimum acreage may not be required** – To qualify for an agricultural classification the parcel must have enough acreage to sustain a commercial operation. Hobby farms or livestock/produce for personal use do not qualify.

6. **Lease property** – A current copy of the lease must accompany the application. The property owner has the responsibility to make sure the lessee is utilizing the property, has a commercial agricultural operation, and is willing to provide financial information regarding their operation. The lease must be in effect as of January 1.
7. **Annual Ag Renewal** - If agricultural classification is granted, the classification will automatically renew, pending there has been no ownership conveyances and an annual inspection. Polk County Board of County Commissions adopted Resolution 09-999 on June 3, 2009 to waive the annual renewal process. See Appendix E for copy of resolution.

**Guidelines for Specific Agricultural Operations**

**Citrus**

- Groves are recommended to be 4 acres or part of a larger operation in order to considered a commercial operation.

- Land must have been prepared or planted by January 1st, or a signed contract for trees must be provided.

- Number of trees per acre, variety of citrus, and the effective age of the trees, is to be submitted with the application. A minimum of 100 trees per acre is the current standard.

- Proper care and management of the grove must be evident. Records provided upon request. Best Management Practices should be used.

- Specialty groves and organic operations will be evaluated on a case by case basis.

- If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.

- Provide an 18 month chronological timeline of all agricultural activity beginning 6 months prior to the current tax year.

- A lease by itself is not sufficient evidence that a parcel is in commercial agricultural use.

- Income and expense information should be submitted.

- Schedule 'F' from IRS tax return.

- Provide a 3-year business plan.
Pasture

- Pasture land is recommended to be 10 acres or part of a larger operation in order to be considered commercial property.

- A commercial herd at a minimum of 6 head of cattle must be maintained on any operation of 20 acres or less.

- For parcels larger than 20 acres, herd size will be determined by quality of pasture land/soil.

- Provide the number of cattle currently on the property.

- Provide the number of cattle sold within the last 12 months.

- If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.

- Provide an 18 month chronological timeline of all agricultural activity beginning 6 months prior to the current tax year.

- If property is leased, the lease must be in effect as of January 1st and a copy must be attached to the application.

- A lease by itself is not sufficient evidence that a parcel is in commercial agricultural use.

- Receipts from the sale of stock and expenses incurred from the ag operation are required.

- Schedule ‘F’ from IRS tax return.

- Provide a 3-year business plan.
Nursery

- Nurseries are recommended to be 1 acre, irrigated and stocked in order to be considered a commercial operation.
- A list of the type of plants grown in the nursery should be included with the application.
- Proper care and management of the nursery must be evident; records must be provided upon request. Best Management Practices should be used.
- Operation must be wholesale – please provide a list of all commercial accounts.
- If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.
- Provide an 18 month chronological timeline of all agricultural activity beginning 6 months prior to the current tax year.
- If property is leased, the lease must be in effect as of January 1st and a copy must be attached to the application.
- Receipts from the sale of stock and expenses incurred from the ag operation are required.
- Schedule ‘F’ from IRS tax return.
- Provide a 3-year business plan.

Goat Farm

- Goat farms are recommended to be 3 acres or be part of a larger operation in order to be considered a commercial operation.
- A commercial herd of goats at a minimum of 12 goats must be maintained.
- Provide the number of goats currently on property.
- Provide the number of goats sold within the last 12 months.
- If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.
• Provide an 18 month chronological timeline of all agricultural activity beginning 6 months prior to the current tax year.

• If property is leased, the lease must be in effect as of January 1st and a copy must be attached to the application.

• A lease by itself is not sufficient evidence that a parcel is in commercial agricultural use.

• Receipts from the sale of stock and expenses incurred from the Ag operation are required.

• Schedule ‘F’ from IRS tax return.

• Provide a 3-year business plan.

**Hay Production**

• Hay fields are recommended to be 5 acres or part of a larger agricultural operation in order to be considered a commercial operation.

• An indicated effort has been made to maintain and care sufficiently for this type of ag classification i.e. fertilizing, mowing, weed management, etc. Best Management Practices should be used.

• A minimum of 2 cuts should be expected within 12 months. Seasonal weather, lack of rain, soil type may have an influence time of cuts.

• Provide date stamp pictures of hay cuts.

• If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.

• Provide an 18 month chronological timeline of all agricultural activity beginning 6 months prior to the current tax year.

• If property is leased, the lease must be in effect as of January 1st and a copy must be attached to the application.

• A lease by itself is not sufficient evidence that a parcel is in commercial agricultural use.

• Receipts from the sale of hay and expenses incurred from the Ag operation are required.
Hay Establishment Practices

The process to establish a commercially viable hay crop may be lengthy one. A two year timeframe is not out of the ordinary. Similar to citrus, which may take 3-5 years to begin to produce a commercial crop, hay may not be harvested for 2 years from the initial preparation of the hayfield. This timeframe depends on a multitude of factors such as weather, soil, condition of the existing grass, etc. A business plan must be provided by the landowner or lessee in establishing a hay operation.

An example of an acceptable plan is as follows:

- By mid to late spring of the initial year, mow vegetation down very low to prepare for no-till seeding.
- Spray selective herbicides to suppress weed competition.
- After mowing is completed, plant Bahia and Bermuda grass seed with the no-till planter.
- The grass will sprout when the summer rains begin. At that time keep the lot areas mowed down for a month as the grass sprouts and gets established.
- In early summer, apply 50 pounds of nitrogen fertilizer per acre to the new grass and continue to keep it mowed for weed suppression as the grass becomes further established.
- Spray selective herbicides to suppress weed competition.
- Periodically continue mowing for weed suppression.
- During early spring of the following year, apply 50 pounds of nitrogen fertilizer per acre.
- Late summer / fall of the following year, cut and bale hay.
- Continue the above process annually for ongoing hay production.
Hay producers can expect a wide range of production numbers from their hayfield annually. Weather, management techniques, and varieties can dramatically affect these outcomes. Also, the end consumer may dictate what methods are used for production. For example, hay may be produced for horses (hi-grade), cattle (mid-grade), or erosion control (low-grade).

**Hay Production Criteria for Platted Residential or Commercial Subdivisions**

- Hay fields are recommended to be 5 acres or part of a larger agricultural operation in order to be considered a commercial operation.

- Subdivisions with an aggregate of less than 5 acres will not qualify.

- Predominate use of total subdivision acreage must be in hay production.

- Only areas containing at least 150 linear feet of road frontage will be considered.

- Taxpayer must document the following after each cut:
  - Number of rolls cut
  - Date Stamp pictures of hay cuts
  - Receipts that include the buyer name
  - Price per roll

- A minimum of 2 cuts should be expected within 12 months. Seasonal weather, lack of rain, soil type may have an influence time of cuts.

- An indicated effort has been made to maintain and care sufficiently for this type of ag classification, i.e. fertilizing, mowing, weed management, etc. Best Management Practices should be used.

- If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.

- Provide an 18 month chronological timeline of all agricultural activity beginning 6 months prior to the current tax year.

- All leases must be submitted.
• A lease by itself is not sufficient evidence that a parcel is in commercial agricultural use.

• Receipts of expenses incurred from the Ag operation are required.

• Provide a 3-year business plan.

• Taxpayer must submit a plat map of each subdivision indicating which lots are being applied for.

• Each application should reflect only one ownership.

• Municipal planning and zoning ordinances for agricultural properties within each cities jurisdiction are verified prior to granting Ag classification.

• Home Owner Association (HOA) covenants are reviewed for restrictions related to agricultural properties.

• Taxpayer should submit county planning department requirements for mowing setbacks for utility and vacant lots.

**Timber**

• Timber operations are recommended to be at least 5 acres or part of a larger agricultural operation in order to be considered a commercial operation.

• A Timber Management Plan signed by a certified forester is required.

• Proper care and management of the timber must be evident. Records provided upon request. Best Management Practices should be used.

• Typically 600 to 800 trees per acre. A commercial stand of planted pines requires a survival rate of 400 trees per acre.

• Tree and Planting costs and expense records are required.

• If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.

• Receipts from the sale of timber are required.

• Schedule ‘F’ from IRS tax return.

• Provide a 3-year business plan.
Sod

- Sod operations are recommended to be 10 acres or part of a larger agricultural operation in order to considered a commercial operation.

- List sod types.

- Proper care and management of the sod must be evident. Records must be provided upon request. Best Management Practices should be used.

- If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.

- Provide an 18 month chronological timeline of all agricultural activity beginning 6 months prior to the current tax year.

- If property is leased, the lease must be in effect as of January 1st and a copy must be attached to the application.

- A lease by itself is not sufficient evidence that a parcel is in commercial agricultural use.

- Receipts from the sale of sod and expenses incurred from the AG operation are required.

- Schedule ‘F’ from IRS tax return.

- Provide a 3-year business plan.

Crops

- Cropland operations typically consist of 2 acres or more. Size and Scope must be commercial.

- Proper care and management of the crop must be evident. Records must be provided upon request. Best Management Practices should be used.

- List crop types.

- If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.

- Provide an 18 month chronological timeline of all agricultural activity beginning 6 months prior to the current tax year.
• If property is leased, the lease must be in effect as of January 1\textsuperscript{st} and a copy must be attached to the application.

• A lease by itself is not sufficient evidence that a parcel is in commercial agricultural use.

• Receipts from the sale of crop and expenses incurred from the ag operation are required.

• Schedule ‘F’ from IRS tax return.

• Provide a 3-year business plan.

**Horses**

• Horse Breeding operations typically consist of 10 acres or more. Size and Scope must be commercial.

• Horse breeding operations must have at a minimum of 3 brood mares.

• Pleasure horses do not qualify.

• Documents such as insemination reports, stud fees, marketing information, registration papers, etc. are required.

• If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.

• Provide an 18 month chronological timeline of all agricultural activity beginning 6 months prior to the current tax year.

• If property is leased, the lease must be in effect as of January 1\textsuperscript{st} and a copy must be attached to the application.

• A lease by itself is not sufficient evidence that a parcel is in commercial agricultural use.

• Receipts from the sale of stock and expenses incurred from the ag operation are required.

• Schedule ‘F’ from IRS tax return.

• Provide a 3-year business plan.
**Miscellaneous**

- Miscellaneous operations may include fish, bees, poultry, hogs, fruit and nuts, grapes, etc.
- Minimum requirements will vary according to each type of operation.
- If any licenses, permits, or agricultural certifications are required by federal, state, or local governments, they should be submitted.
- Provide an 18 month chronological timeline of all agricultural activity beginning 6 months prior to the current tax year.
- If property is leased, the lease must be in effect as of January 1st and a copy must be attached to the application.
- A lease by itself is not sufficient evidence that a parcel is in commercial agricultural use.
- Receipts from the sale of stock and expenses incurred from the ag operation are required.
- Schedule ‘F’ from IRS tax return.
- Provide a 3-year business plan.
CHAPTER 7

Agricultural Land Review Cycle

Agricultural Land Monthly Departmental Responsibilities

- JANUARY: All AG value models are reviewed and updated. Field inspections conducted.

- MARCH – MAY: No lands shall be classified as agricultural lands unless a return is filed on or before March 1 of each year.

- Review ag applications that were filed in a timely manner; on or before March 1.

- Review all applications and conduct field inspections.

- MAY: Ag application approvals, denials, and removals are processed.

- JUNE: Per FL Statute 193.461 Any landowner whose land is denied agricultural classification by the property appraiser may appeal to the Value Adjustment Board. The property appraiser shall notify the landowner in writing of the denial of agricultural classification on or before July 1 of the year for which the application was filed. Polk County sends written notification of denials by June 1.

- Respond to inquiries related to the denial or removal of agricultural classification.

- JULY: Field inspect any possible agricultural classification reinstatements and process agricultural classification applications that were filed late.

- AUGUST: Prepare for upcoming field inspections. Agricultural Classification applications that were filed late. Respond to inquiries related to Truth-In-Millage (TRIM) form.

- SEPTEMBER – DECEMBER: Appraise agricultural parcels.
Agricultural Land Appraisal Cycles

FL Statute 193.023

Duties of the property appraiser in making assessments

1. The property appraiser shall complete his or her assessment of the value of all property no later than July 1 of each year, except that the department may for good cause shown extend the time for completion of assessment of all property.

2. In making his or her assessment of the value of real property, the property appraiser is required to physically inspect the property at least once every 5 years. Where geographically suitable, and at the discretion of the property appraiser, the property appraiser may use image technology in lieu of physical inspection to ensure that the tax roll meets all the requirements of the law. The Department of Revenue shall establish minimum standards for the use of image technology consistent with standards developed by professionally recognized sources for mass appraisal of real property. However, the property appraiser shall physically inspect any parcel or state-owned real property upon the request of the taxpayer or owner.

Polk County appraises on a three year cycle. (Sept. – Mar.)

Year 1 - Citrus

Year 2 - Farmland

Year 3 – Pasture

Agricultural properties are physically inspected as many as three times per year.

Citrus Reappraisal

- Run queries to extract all citrus parcels
  - Create citrus edit spreadsheet
- Physically inspect all citrus parcels
  - The following is confirmed on all parcels at time of physical inspection:
    - Acreage
    - Commercial use
- Actual use
- Quality
- DOR use code
- Citrus varieties
- Irrigation
- Contiguous parcels are in use
- Verify with GIS system & aerials & plats

- Re-assessment of citrus types

- If any changes are discovered to the land use, note changes on citrus edit & deliver work to office so parcels can be reworked to reflect changes

- Commercial evidence requests are mailed to citrus parcels where discrepancies are discovered

- Record date requested information; date received; scan information to parcel record

- Taxpayers that do not comply with commercial evidence request are removed from greenbelt

- Look for new construction; if new construction is discovered cut out appropriate acreage for new construction & notify Real Estate Appraisal Department
Farmland Reappraisal

- Run queries to extract all farmland parcels
  - Create farmland edit spreadsheet
- Physically inspect all farmland parcels
  - The following is confirmed on all parcels at time of physical inspection:
    - Acreage
    - Commercial use/farmland type
    - Quality
    - DOR use code
    - Irrigation
    - Contiguous parcels are in use
    - Verify with GIS system & aerials & plats
- Re-assessment of farmland type
- If any changes are discovered to the land use, note changes on Farmland edit & parcels are reworked to reflect changes
- Commercial evidence requests are mailed to Farmland parcels where discrepancies are discovered
- Record date requested information; date received; scan information to parcel record
- Taxpayers that do not comply with commercial evidence request are removed from greenbelt
- Look for new construction; if new construction is discovered cut out appropriate acreage for new construction & notify Real Estate Appraisal Department
Pasture Reappraisal

- Run queries to extract all pasture parcels
  - Create pasture edit spreadsheet
- Physically inspect all pasture parcels
  - The following is confirmed on all parcels at time of physical inspection:
    - Acreage
    - Commercial use/pasture type
    - Quality
    - DOR use code
    - Contiguous parcels are in use
    - Verify with GIS system & aerials & plats
- Re-assessment of pasture type
- If any changes are discovered to the land use, note changes on pasture edit & deliver to office so parcels can be reworked to reflect these changes
- Commercial evidence requests are mailed to pasture parcels where discrepancies are discovered
- Record date requested information; date received; scan information to parcel record
- Taxpayers that do not comply with commercial evidence request are removed from greenbelt
- Look for new construction; if new construction is discovered cut out appropriate acreage for new construction & notify Real Estate Appraisal Department
Recognizing the pest and disease risks associated with abandoned citrus groves, the state has initiated a comprehensive plan for their removal and destruction. This initiative will help mitigate the impact of exotic citrus pests and diseases (namely citrus greening and citrus canker) by identifying abandoned groves and working cooperatively with county tax assessor offices and property owners regarding abatement options and tax incentives which will foster removal of these reservoirs of infection.

**Key components:**
- Catalog all abandoned groves throughout the state
- Map all high-risk abandoned groves
- Contact abandoned grove owners to ask their intentions for properties
- Inform owners if their groves are not kept in production, they will not be considered part of CHRP.
- Inform owners if they eliminate live citrus trees in abandoned groves, it is considered a bona fide agricultural practice and will remain in compliance with CHRP guidelines, thus maintaining their agriculture exempt status.

*Agricultural land tax exemption* – FDACS' interpretation and position on Section 193.461(7), Florida Statutes, is that if you have a valid CHRP compliance agreement and are in good standing, then the property covered by the agreement is considered in agricultural use, thus for tax purposes is eligible for agricultural land use classification. County property appraisers in citrus-growing areas are developing policies that comply with Section 193.461(7), Florida Statutes.

Property owners with abandoned groves should contact their local CHRP office for more information (see back). Proper documentation is required by county tax assessor offices for exemption, so please contact your local CHRP office for details. If you know of abandoned groves in your area, please report the property to your local CHRP office.
Citrus Health Response Program Mission

*Working together to produce healthy citrus*
- Ensure security of citrus germplasm and citrus nursery programs
- Support effective disease / disease vector management
- Monitor defendable phytosanitary protocol that allows fresh fruit movement to all markets
- Implement citrus nursery clean stock program

Resources for the Industry

*Tools to support citrus*
- Compliance agreements and business plans designed to provide guidance and protect citrus
- Grower Assistance Program – decontamination training, survey assistance, self-survey and business plans
- Best Management Practices
- Participate with growers in the Business Plan Share Program

Citrus Germplasm Introduction Program

*Important disease-free start*
- Ensures citrus germplasm is free from any known graft-transmissible pathogens
- Each variety undergoes years of intensive testing before release
- Provides approved germplasm to citrus budwood registration program
- New 20,000 sq ft facility at future Alachua County budwood site

Citrus Budwood Registration

*Responding to disease pressures*
- Provides clean budwood to citrus industry
- Facilities located outside of citrus-growing area
- 80,000 sq ft facility in Levy County
- Redundant 60,000-sq-ft location planned in Alachua County

Citrus Nursery Guidelines

*Providing clean stock for citrus groves*
- Rules and regulations to protect industry, 5B-62
- Geographic separation of new nurseries and groves
- Citrus nursery stock is propagated and housed in approved insect-proof structures
- All citrus nurseries are on 30-day inspection cycle
- Compliance agreements are required

FDACS/DPI Citrus Health Response Program Offices
Contact Information

FDACS / DPI Citrus Health Response Program Offices

**Avon Park**
3397 US Hwy 27 South
Avon Park, FL 33825
Phone: 863-314-5900

**Immokalee**
424 East market Road, Unit 10
Immokalee, FL 34142
Phone: 239-658-3684

**Tavares**
4129 County Rd 561
Tavares, FL 32778
Phone: 352-253-4547

**Vero Beach / Ft. Pearce**
8075 20th Street
Vero Beach, FL 32966
Phone: 772-778-5069

**Winter Haven**
3027 Lake Alfred Rd
Winter Haven, FL 33881
Phone: 863-298-7777
Citrus Health Response Program (CHRP)
Assessment Policy
For Polk County
Abandoned Grove Initiative

The Citrus Health Response Program (CHRP) is the successor program to the Citrus Canker Eradication Program (CCEP).

The purpose of the program is to manage the impact of citrus canker and citrus greening in commercial citrus groves. To accomplish that purpose, this program declares citrus canker, citrus greening, and the Asian citrus psyllid to be plant pest and nuisances. The program also sets forth procedures for establishing quarantine areas, identifying regulated articles, decontaminating regulated articles, and regulating the movement of citrus nursery stock from areas quarantined for citrus greening. (Rule: 5B-63.001 F.A.C.)

Please provide our office with the following required documentation no later than March 1:

- CHRP Abandoned Grove Compliance Agreement effective as of January 1, of applicable year.

- Site Report which is provided to owner thru the CHRP office as of January 1, of applicable year.

- If property is not currently receiving the greenbelt classification an application should be submitted prior to March 1.

Agricultural Classification

Properties currently receiving the agricultural benefit will not have to file a new application however parcels not under the greenbelt classification will be required to file an application with our office prior the statutory date of March 1. Statute 193.461 (3) (a)
Abandoned Grove Compliance Agreement

An Abandoned Grove Compliance Agreement which has been approved and dated prior to January 1 of the applicable year must be submitted to our office no later than March 1 in order to receive the CHRP Abandoned Grove assessment for that tax year.

The landowner must maintain compliance under the Abandoned Grove Compliance Agreement. When the Abandoned Grove Compliance Agreement has expired the property will be assessed according to use.

Use Change

If the Abandoned Grove Compliance Agreement is dated after January 1, an assessment of $50.00 an acre (per Florida Statue 193.461(7)) will go into effect for the following tax year. If after the first year of receiving the CHRP Abandoned Grove assessment, a different agricultural operation is put in place, the assessment will change accordingly. Any non-agricultural use will be assessed at full market value as of the statutory date of January 1.

If the agricultural operation is changed within the tax year prior to receiving the CHRP Abandoned Grove assessment, the following tax year will be assessed at $50.00 an acre. The subsequent tax year will be assessed according to use.

If a non-agricultural operation is put in place within the tax year prior to receiving the CHRP Abandoned Grove assessment, the property will not qualify for the CHRP Abandoned Grove assessment and will be assessed at full market value.

Sale or Transfer of Property

If property is sold or transferred while an Abandoned Grove Compliance Agreement is active, it is the responsibility of the new owner to file a new agricultural application. An Abandoned Grove Compliance Agreement whether transferred or newly established must be submitted along with the new agricultural application in order to continue with the CHRP Abandoned Grove assessment.
Appendix A

DOR* Use Codes for Agricultural Land

*DOR=Department of Revenue

**AG 51 CROPLAND**

5100 Cropland
5101 Cropland w/Misc. Imp.
5102 Cropland w/Res.
5103 Cropland w/M.H.
5110 Cropland w/Undev. Lnd.
5111 Cropland w/Undev. w/Misc. Imp.
5112 Cropland w/Undev. w/Res.
5113 Cropland w/Undev. w/M.H.
5120 Cropland w/Com. Land
5121 Cropland w/Com. Bldg.
5122 Cropland w/M.H. Park
5123 Cropland w/Golf Course
5134 Sod Farm w/Misc.Imp.
5135 Sod Farm w/Residence
5136 Sod Farm w/Mobile Home

**AG 54 TIMBER**

5400 Timber
5401 Timber w/Misc.Imp.
5402 Timber w/Res.
5403 Timber w/M.H.
5410 Timber w/Undev. Lnd.
5411 Timber w/Undev. w/Misc. Imp.
5412 Timber w/Undev. w/Res.
5413 Timber w/Undev. w/M.H.
5420 Timber w/Com. Land
5421 Timber w/Com. Bldg.
AG 60 PASTURE

6000 Pasture
6001 Pasture w/Misc. Imp.
6002 Pasture w/Res.
6003 Pasture w/M.H.
6010 Pasture w/Undev. Lnd.
6011 Pasture w/Undev. w/Misc. Imp.
6012 Pasture w/Undev. w/Res.
6013 Pasture w/Undev. w/M.H.
6020 Pasture w/Com. Land
6021 Pasture w/Com. Bldg.
6022 Pasture w/M.H. Park
6023 Pasture w/Golf Course
6030 Pasture w/Farmland
6031 Pasture w/Farmland w/Misc. Imp.
6032 Pasture w/Farmland w/Res.
6033 Pasture w/Farmland w/M.H.
6040 Sunrise Acres

AG 66 CITRUS

6600 Citrus
6601 Citrus w/Misc. Imp.
6602 Citrus w/Res.
6603 Citrus w/M.H.
6610 Citrus w/Undev. Lnd.
6611 Citrus w/Undev. w/Misc. Imp.
6612 Citrus w/Undev. w/Res.
6613 Citrus w/Undev. w/M.H.
6620 Citrus w/Com. Land
6621 Citrus w/Com. Bldg.
6622 Citrus w/M.H. Park
6623 Citrus w/Golf Course
6630 Citrus w/Pasture
6631 Citrus w/Pasture w/Misc. Imp.
6632 Citrus w/Pasture w/Res.
Appendix A DOR Use Codes for Agricultural Land

6633 Citrus w/Pasture w/M.H.
6640 Citrus w/Farmland
6641 Citrus w/Farmland w/Misc. Imp.
6642 Citrus w/Farmland w/Res.
6643 Citrus w/Farmland w/M.H.
6693 Citrus w/Pasture/Res/Irrig

**AG 67 POULTRY,BEES,FISH,RABBITS**

6700 Poultry, Bees, Fish, Rabbits...
6701 Poultry, Bees, Fish, Rabbits... w/Misc. Imp.
6702 Poultry, Bees, Fish, Rabbits... w/Res.
6703 Poultry, Bees, Fish, Rabbits... w/M.H.
6710 Poultry, Bees, Fish, Rabbits... w/Undev. Lnd.
6711 Poultry, Bees, Fish, Rabbits... w/Undev. w/Misc. Imp.
6712 Poultry, Bees, Fish, Rabbits... w/Undev. w/Res.
6713 Poultry, Bees, Fish, Rabbits... w/Undev. w/M.H.
6720 Poultry, Bees, Fish, Rabbits... w/Com. Land
6721 Poultry, Bees, Fish, Rabbits... w/Com. Bldg.
6753 Hog Farm w/Irrig
6754 Hog Farm w/Misc.Imp.
6755 Hog Farm w/Res
6756 Hog Farm w/MobileHome

**AG 68 DAIRY**

6800 Dairy
6801 Dairy w/Misc. Imp.
6802 Dairy w/Res.
6803 Dairy w/M.H.
6810 Dairy w/Undev. Lnd.
6811 Dairy w/Undev. w/Misc. Imp.
6812 Dairy w/Undev. w/Res.
6813 Dairy w/Undev. w/M.H.
6820 Dairy w/Com. Land
6821 Dairy w/Com. Bldg.
6843 Dairies & Feed Lots w/Irrig
AG 69 ORNAMENTAL

6900 Nursery
6901 Nursery w/Misc. Imp.
6902 Nursery w/Res.
6903 Nursery w/M.H.
6910 Nursery w/Undev. Lnd.
6911 Nursery w/Undev. w/Misc. Imp.
6912 Nursery w/Undev. w/Res.
6913 Nursery w/Undev. w/M.H.
6920 Nursery w/Undev. w/Com. land
6921 Nursery w/Undev. w/Com. Bldg.
6983 Ornament & Citrus Nurs w/Irrig
Appendix B: Hay Production in Florida

Hay Production in Florida


Even though Florida has a relatively warm climate, pastures do not grow year-round. Cattle, horses, and other domestic grazers need some type of conserved forage during the late fall, winter, and early spring when growth of warm season pastures is greatly reduced due to short days, cool temperatures, and possibly drought. In many areas of Florida, especially in northern Florida, the need for conserved or stored forage can best be met with hay. Some ranchers in southern Florida with a relatively low stocking rate can accumulate or stockpile late summer pasture growth for grazing during the fall and winter and thus do not feed hay.

Florida, with its high humidity and frequent rainfall during the growing season, is not the easiest place to dry a hay crop, yet hay is often the best choice as a means of conserving forage. With modern harvesting equipment, the haying process is largely mechanized and therefore requires little hand labor. If the hay crop can be harvested at an immature stage of growth, dried, and stored without excessive rain damage, it will provide a feed of good nutritional value. Besides the hay that is used by beef and dairy operations, there is a large market for horse-quality bermudagrass hay that can be grown in the state. The total production of all types of hay in Florida ranges from 600,000 to 800,000 tons per year.

Forages For Hay: Perennial forage plants are recommended for hay instead of annuals in order to avoid the repeated cost of establishment. Several perennial grasses are used for hay in Florida. In northern Florida the improved hybrid bermudagrasses are the most popular. These grasses are highly productive and generally dry faster than most other grasses. Bahiagrass can be harvested for hay but is mainly used for grazing. In southern Florida, stargrass, bermudagrass, limpograss (hemarthria), and Mulato grass (Brachiaria hybrid) can also be used for hay.

Perennial peanut can be grown to produce a high quality legume hay. The summer annual legume alyceclower can be planted following watermelons or a spring vegetable crop to produce one or two cuttings of hay.
Hay Production in Florida

Certain cool-season forages such as the small grains (especially oats), ryegrass, red clover, and alfalfa can be grown and harvested as hay. Alfalfa acts mostly as an annual in Florida but may persist for two years or more on some of the clay soils of northern Florida. Since alfalfa must be harvested on a 28 to 30 day schedule, a producer desiring to grow alfalfa must be prepared to take some harvests as silage or haylage, because rain will likely prevent drying of one or more cuttings. The economics and risk involved in growing alfalfa in Florida have generally not been favorable.

Other Hay Crops: The summer annual grasses pearl millet and sorghum-sudangrass are better suited for grazing or green chop than for hay. Their large stems make drying difficult, and therefore are not generally recommended for hay. When planted with the intention of harvesting for hay, these grasses should be planted at a higher than normal seeding rate in order to decrease stem size. Also, the cut stems should be brushed with a hay conditioner to speed drying. Naturally-occurring stands of crabgrass can be harvested for hay. This grass makes an excellent quality hay, but drying takes longer than for bermudagrass.

Cowpeas, soybeans, and other legumes have been used for hay. Legumes usually produce a higher-quality hay than grasses; however, growing legumes for hay involves greater risk. Legumes are more likely than grasses to lose their leaves from shattering if the crop is not handled properly. If the crop, when almost dry enough to bale, is rained on and then allowed to redry, the probability of leaf-loss during baling is increased. If the crop is rained on in the swath and stays wet for several days, it may rot.

Fertilization: Management of bermudagrass and other perennial grasses for hay production is similar. For established stands of grass, take soil samples in November to December, and submit to the soil testing laboratory in order to determine soil pH and soil levels of phosphorus, potassium, and magnesium. The initial spring application of fertilizer (based on soil test recommendations) should be applied as soon as the grass starts growing (February to April). Apply 80 lb/A and all of the recommended P₂O₅ and K₂O in early spring. Apply an additional 80 lb N and 40 lb K₂O/A after each cutting, except the last in the fall. Include 20 lb of P₂O₅ in the supplemental fertilizer if the soil tested low or medium in P. Sulfur, although not generally recommended, may be deficient in some areas. Unfortunately, there is not a good test for sulfur, but it may be wise to supply some sulfur at the initial spring application by using ammonium sulfate as the nitrogen source.

Weed Control: There are excellent broadleaf weed control programs for grass hay crops. Also, Pensacola bahiagrass can be removed from bermudagrass hay fields with the herbicide Cimmaron®. Other weedy grasses such as vaseygrass or maidencane can be a problem for producers who are attempting to produce pure bermudagrass for the horse hay market. It has always been difficult to find a herbicide that will control one grass but leave another. A new herbicide, Journey®, will control crabgrass, sandburr, vasygrass, Pensacola bahiagrass, nutsedge, and certain broad leaves in bermudagrass. See the publication SS-AGR-08 Weed Management in Pastures and Rangeland for details. Except for alfalfa, good herbicide programs are not available to remove broadleaf weeds from legume hay crops. Occasionally, a poisonous plant such as sickle-pod will infest a planting of alfalfa to such an extent that the crop must be abandoned. If a height differential exists, such that the weed is taller than the hay crop, then it may be possible to use a non-selective herbicide in a wipe-on application to remove the weed.

When to Make Hay: In northern Florida, hay can be harvested throughout the growing season in most years. In southern Florida, hay can be harvested in the spring if there is sufficient growth before the summer rains start, and in the fall after the summer rains stop. In southern Florida, summer showers occur almost every day and most of the grass is grown on flatwoods sites which tend to stay wet throughout the summer. Both of these factors practically eliminate the possibility of getting a hay crop dry during the summer. Therefore, many producers will apply fertilizer in September to extra pasture areas or hay fields of stargrass or limpopgrass and harvest these areas in October or November, after the rainy season has ended. South Florida dairymen are harvesting their grass as silage and therefore are able to harvest through the summer. Some hay
Hay Production in Florida

producers may be interested in considering the "roll-bale or tube silage system". For more information, visit the University of Florida's Animal Science Department's website at: http://www.animal.ufl.edu/.

Most of the hay made in Florida is made from perennial grasses such as bermudagrass and stargrass. The first growth of these grasses in the spring can be harvested when the grass reaches a height of 14 to 18", or when there is enough growth to justify use of the harvesting equipment. Try to take at least one harvest before the summer rains start. A few producers use recycled wastewater from adjoining municipalities for irrigating their hayfields in order to overcome spring drought. After the first harvest, plan to harvest on a 4-to 5-week schedule. Harvesting well-fertilized bermudagrass or stargrass at 4 to 5 weeks of regrowth produces acceptable yields of good quality grass hay. If the weather cooperates, harvest at 4 weeks. This will produce relatively high-quality hay. If harvest is delayed beyond 4 weeks, try not to go beyond 6 weeks, because there is usually no increase in yield for bermudagrass (bottom leaves begin to die) and quality continues to decrease. In general, all of the perennial grasses decrease in quality as they mature (Figure 1 and Figure 2).

Always be ready to harvest at 4 weeks of regrowth or even sooner if there is enough growth and prospects for good drying weather. Waiting a few more days to meet the calendar schedule might be waiting for bad weather. "Make hay while the sun shines." All other perennial grasses should follow a similar harvest schedule. Floralta or Bigalta limpograss (hemarthria) can be harvested on a 6-week schedule without a serious loss in digestibility. A suggested harvest schedule for hay crops is given in Table 1.

**Hay-making techniques**

**Equipment  Needed:** The individual making hay should have good, reliable equipment. When the crop is ready to harvest and the weather is suitable, the equipment should be ready to start working with little fear of breakdown. Equipment breakdown can result in the loss of a hay crop.

Basic equipment needed is a mower, rake, tedder, and baler. Other equipment such as a conditioner, inverter, and equipment to load and transport bales may be useful at times. Advice on how to use or operate the equipment can be obtained from the equipment manuals. Two types of balers are commonly used: one makes a small rectangular bale weighing 50 to 60 lb, and the other makes a large roll bale weighing 600 to 1100 lb.

**The Weather and Drying Time:** The most difficult variable to deal with when making hay in Florida is the weather. At certain times of the year (spring and fall) cold fronts pass over the state bringing rain. As soon as these fronts have passed there are usually several days of dry weather suitable for making hay. During the summer the rainfall comes from thundershowers which may appear daily and the chances for obtaining 3 to 4 days without rain are greatly reduced.

---

**Figure 1.** Effects of maturity on forage protein.

**Figure 2.** Effect of maturity on forage TDN.
Table 1. Harvest schedule for various hay crops.

<table>
<thead>
<tr>
<th>Crop</th>
<th>Growth stage or height</th>
<th>Harvest interval, weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bermudagrass</td>
<td>14 - 18&quot;</td>
<td>4 - 5</td>
</tr>
<tr>
<td>Stargrass</td>
<td>14 - 18&quot;</td>
<td>4 - 5</td>
</tr>
<tr>
<td>Mulato grass</td>
<td>14 - 18&quot;</td>
<td>4 - 5</td>
</tr>
<tr>
<td>Bahia grass</td>
<td>10 - 12&quot;</td>
<td>4 - 5</td>
</tr>
<tr>
<td>Pangola</td>
<td>14 - 18&quot;</td>
<td>4 - 5</td>
</tr>
<tr>
<td>Limopgrass</td>
<td>16 - 24&quot;</td>
<td>5 - 6</td>
</tr>
<tr>
<td>Perennial Peanut</td>
<td>(12 plus inches)</td>
<td>6 - 8</td>
</tr>
<tr>
<td>Alyceclover</td>
<td>(just before flowering)</td>
<td>---</td>
</tr>
<tr>
<td>Oats, Wheat, Rye</td>
<td>Boot to early head</td>
<td>---</td>
</tr>
<tr>
<td>Ryegrass</td>
<td>Boot to early head</td>
<td>---</td>
</tr>
<tr>
<td>Red, Crimson, Arrowleaf Clovers</td>
<td>Early flowering</td>
<td>---</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>(1st harvest at bud stage, later harvest at 1/10 bloom)</td>
<td>---</td>
</tr>
<tr>
<td>Sorghum-sudan</td>
<td>30 to 40&quot;</td>
<td>---</td>
</tr>
<tr>
<td>Pearl millet</td>
<td>30 to 40&quot;</td>
<td>---</td>
</tr>
<tr>
<td>Soybean or Cowpea</td>
<td>Mid-to full bloom</td>
<td>---</td>
</tr>
</tbody>
</table>

Drying (curing) time is affected by the type of crop, the quantity or bulk put on the ground and weather conditions (temperature, humidity, cloud cover, daylength, soil moisture, etc.). Bermudagrass and Mulato grass dry faster than Florida limopgrass. Grasses with large-diameter stems such as sorghum-sudan take longer to dry than grasses with small stems. It is usually recommended that grasses with large stems be processed through a conditioner in order to crush the stems and speed up drying. All cut hay crops should be laid out in as wide a swath as possible. This will maximize exposure of the crop to wind and sunlight, therefore reducing drying time. Legume crops should be put into a windrow in 3 to 4 hours after cutting or before the plants are dry enough that the leaves start to shatter when raked (before plant moisture falls below 40%). If the crop gets too dry before windrowing, wait and rake in the morning just as the surface dew begins to dry.

Ideally the hay crop should be at 12 to 15% moisture before baling. Grasses put up in the large rolls have been baled when the moisture drops below 20%, but 18 to 20% moisture will likely result in some heating and molding. A hay producer should have an electronic moisture tester to help in deciding when it is safe to bale.

If the hay crop is on the ground and almost dry enough to bale, but is rained on, it may still be salvaged if the rain stops after one or two days. Grass can be turned or fluffed with a tedder. Material that has been matted down by the rain is raised by the tedder in order to expose more surface area to the air or wind. Legumes are more difficult to deal with, whether rained on or not, since their leaves have a greater tendency to shatter. To reduce leaf shattering, a legume hay crop should be raked into a windrow or tedded before moisture in the plant drops below 40%. An inverter may be useful in handling a legume since it appears to be less aggressive than a tedder and less likely to knock the leaves off. When a hay crop is rained on, the producer should avoid (if possible) the tendency to rush the baling of the crop after the second drying attempt. This often results in bales that have too high a moisture content and therefore will mold or rot.

Hay preservatives: Hay producers may often have their hay crop almost dry enough to bale when the rain comes. If they could add something to the hay that would allow them to bale at 20 to 25% moisture, this would permit them to bale sooner and perhaps ahead of a rain. A hay preservative consisting primarily of propionic acid has been used for this purpose. It is usually sprayed on the hay as it enters the throat of the baler. This organic acid can be used on hay that contains 20 to 25% moisture. It will suppress the growth of molds and other microorganisms. In the past the product was quite...
Hay Production in Florida

cautious to both the skin of the operator and the paint and metal of the baler. Newer formulations are less corrosive to equipment, but it is probably still a good idea to wash the baler after each use. The product will not suppress mold growth indefinitely. How long the mold growth will be suppressed is unclear—perhaps as long as 4 to 6 months.

Another product for preserving "high moisture" hay is the hay inoculant. Certain types of "good bacteria" are spread on the hay with the idea that they will overwhelm and suppress the growth of molds and other undesirable organisms that cause heating or rotting of the hay. Whether or not these inoculants will work on Florida hay is unclear. Research studies in other states have not always been positive.

**Making quality hay**: A good quality hay is one that has a relatively high level of total digestible nutrients (TDN), and is palatable. Some hay producers are mainly concerned with the quantity of hay produced per acre, when the focus should be on the quality of TDN harvested per acre. Several factors can influence the amount of hay produced and its quality; these are stage of growth or age of the plants when harvested, forage species, fertilization, weed control, and the weather.

Stage of growth or maturity when the hay is harvested is the single most important factor affecting hay quality. Harvesting at the correct stage of maturity is the best way that producers can improve hay quality. Stage of maturity at which the hay is harvested influences not only the protein content (Figure 1) and level of digestibility (Figure 2), but also how well animals eat the hay, especially bermudagrass hay. See Table 1 for appropriate maturity to harvest various hay crops for the best combination of quantity and quality.

Annual grasses such as oats or sorghum-sudan are usually higher in quality than warm season perennial grasses. Legumes, especially cool season legumes, are usually higher in protein and digestibility (higher quality) than perennial grass hay. This may not always hold true, especially if the grass is highly fertilized and harvested at an immature stage of growth, while the legume hay crop is harvested at a very mature stage and contains a certain percentage of grass that will also be very mature (see SS-AGR-63 *Forage Testing*). Fertilization can affect quality. Increasing the rate of nitrogen applied to grasses will not only increase yield but will also increase percent protein if the grass is harvested at an immature stage of growth. Digestibility may also increase slightly.

Quality will be lowered if a hay crop is rained on after it has been cut and dried but not yet baled and removed from the field. Soluble sugars and some protein can be leached from the plant tissue, thus lowering quality. The extent of loss will depend on how dry the hay is when the rain comes and how much rain falls. The drier the hay and the greater the rainfall, the greater the loss.

**Hay Storage**: Hay harvested in the spring, any legume hay harvested in Florida, and small rectangular bales should be stored in a shelter. A permanent shelter would be desirable, but if this is not available, there are tarps made specifically for covering hay (Figure 3).

![Figure 3. Hay tarp.](image-url)

Ordinarily hay that is to be stored under a shelter should be picked up and moved to the shelter as soon after baling as possible to prevent the hay from getting wet from rain; however, if the moisture level in the bale is on the high side (18 to 20%) then it may be wise to let the bales stand in the field for a day before stacking them under a shelter. If the inside of the bale is hot it should be left in the field until it cools. This will help prevent spontaneous combustion and fire which may occur in a stack or barn when hay that has too high a moisture content is placed there.
Grass hay, put up in large rolls, is often stored outside. If hay is left outside in the open, there will be a certain amount of loss. The loss would be expected to be greater on a high-quality grass hay than it would be on a low-quality, more mature hay and on spring-harvested hay that would be outside through the entire rainy season. If large round bales are stored outside, the bales should be placed in an area that is well-drained, or on rock or some other structure that will prevent water from wicking up from the bottom of the bale. Do not stack bales, but place them end to end in single rows with enough space between rows so that the rounded sides of the bales do not touch. Round bales wrapped tight and with enough string to form a smooth, even surface usually have less water penetration and spoilage than bales with a looser and less-uniform surface. Recent experiences indicate that net wrap on round bales may also reduce surface spoilage, especially for hay stored outside during the summer.

Feeding Hay: When feeding hay, the livestock producer should try to keep feeding losses to a minimum. Feeding losses are mainly due to trampling and refusal. Leaf shatter from legume hay also may produce significant loss. Although labor intensive, feeding a one day supply in a feed bunk is a sure way to minimize loss. Feeding a one day supply on sod, and rotating feeding areas has also been used effectively. When feeding the large roll bales, losses can be excessive if feeding is not done properly. Use a feeding panel or hay ring to restrict access to the hay (Figure 4). This will reduce trampling loss. If hay rings are not available, feed only as much hay as the animals can consume in one or two days. Also, make sure animals do not enter the hay storage area.

Using Forage Testing: The nutritional value of a hay can be determined by taking a sample of the hay and sending it to a forage testing laboratory. These labs usually test for total digestible nutrients, neutral detergent fiber, and protein. Some labs may also test for minerals. The producer feeding hay can use the results of a forage test to determine whether supplemental nutrients are needed and if so how much. The producer selling hay may use the forage test to help sell the hay (see SS-AGR-63 Forage Testing). It is important to collect a representative sample of hay to submit for testing. Do not collect surface samples from weathered baled hay, instead use a commercial hay core sampler or reach inside the bale to collect a sample from the interior.
Appendix C: Bermudagrass Production in Florida

Bermudagrass Production in Florida


The improved hybrid bermudagrasses (Cynodon dactylon L.) are used for both hay and grazing. Hybrid bermudagrasses have been popular for hay production because they are very responsive to nitrogen fertilizer, have high yield potential, and usually dry or cure faster than most other forages that could be used for hay. Overseeding of winter forages has generally been more successful on bermudagrasses than on bahiagrasses. Many research studies have shown high animal weight gains per acre when bermudagrass is well fertilized or grown under soil with high nutrient concentrations.

BERMUDAGRASS VARIETIES

The following is a list of varieties that can be used in Florida: Coastal, Suwannee, Coastcross-1, Gallie, Alafia, Tifton 44, Tifton 78, Tifton 85, Florukirk, and Jiggs. Stargrasses are closely related to the bermudagrasses, and several varieties are available. The newer varieties were developed primarily for increased yield and quality.

Coastal was the first improved forage bermudagrass. It is well adapted in north Florida and has performed well for many years. However, quality is lower and yield is about 30% less than later releases such as Tifton 85.

Suwannee was released in 1953 and is similar to Coastal but will out-yield Coastal when grown on the very drought susceptible deep sands.

Coastcross-1 was released in 1967. It is much more digestible than Coastal, but has less cold tolerance. It may be subject to winter-killing in severe winters. It spreads rapidly by aboveground stolons, and develops few, if any, rhizomes. It is now grown only in the warmer areas of peninsular Florida for hay production.

1. This document is SS-AGR-60, one of a series of the Agronomy Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. This publication is also part of the Florida Forage Handbook, an electronic publication of the Agronomy Department. For more information you may contact Y.C. Newman (ynnew@ufl.edu). Originally written by Carol G. Chambliss. Revised February 2006, August 2010, and July 2011. Please visit the EDS website at http://eds.ifas.ufl.edu.

2. Y.C. Newman, assistant professor, Agronomy Department; J.M.B. Vendramini, assistant professor, Agronomy Department; Range Cattle Research and Education Center–Ocala, FL; C.G. Chambliss (deceased), associate professor, Agronomy Department; F.A. Johnson, professor, Entomology/Nematology Department; and M.B. Adjei (deceased), associate professor, Agronomy Department, Range Cattle Research and Education Center–Ocala, FL; Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

The use of trade names in this publication is for the purpose of providing specific information. UF/IFAS does not guarantee or warranty the products named, and references to them in this publication do not signify our approval to the exclusion of other products of suitable composition.

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution authorized to provide research, educational information and other services only to individuals and institutions that function without discrimination with respect to race, color, sex, religion, age, handicap, sexual orientation, marital status, national origin, political opinions or affiliations. U.S. Department of Agriculture Cooperative Extension Service, University of Florida, IFAS, Florida A&M University Cooperative Extension Program, and Boards of County Commissioners Cooperating. Hilfie Ferrer-Chancy, Interim Dean.
Callie is more digestible and higher yielding than Coastal but is susceptible to rust disease which may become severe if the grass is not harvested on a 4- to 5-week schedule. Callie produces few rhizomes, and therefore it is suggested that it is best established by planting the green tops instead of sprigs.

Alicia was introduced to producers by a private individual from Texas. Its ease of establishment and yield is similar to Coastal, but it is the least digestible of the bermudagrasses, and is generally not recommended.

Tifton 44 is more digestible than Coastal and is more cold-hardy than any of the other bermudagrasses. It is more difficult to establish than other bermudagrasses and should be established from sprigs.

Tifton 78 was more digestible and higher yielding than Coastal in research studies at Tifton, GA, and Gainesville, FL. But producers have had erratic results with both establishment and persistence on Florida’s sandy soils.

Tifton 85 is a hybrid between a bermudagrass and a stargrass developed and released by Dr. Glenn Barton’s breeding program at the Coastal Plain Station at Tifton, GA. It is more digestible than Coastal and has produced both higher hay yield and animal weight gain than Coastal across the southeast. It has performed well in Florida and has been widely accepted by producers. It has the same adaptation areas as Coastal, but similar to Coastal it is not recommended for the flatwoods if soils are seasonally flooded. It has larger stems than Coastal, and this, along with higher yield, may increase hay drying time as compared to the finer stem bermudagrasses.

Florakirk is a release by the University of Florida/IFAS. It is a sister line to Tifton 78. Similar to Callie, Florakirk is susceptible to rust disease on the leaves, which may become severe if the grass stubble accumulates under grazing conditions. In long term studies at both the Ona, FL and Jay, FL Research and Education Centers, it was easier to establish, more persistent, and more productive than Tifton 78. It is a fine-stemmed bermudagrass recommended primarily for hay production in the panhandle and North Peninsula Florida.

Jiggs is a private release from Texas closely related to Callie and more closely related to a Mississippi ecotype called Rice Maddox. Jiggs is widely used in South Florida because it performs better than the other bermudagrass hybrids in poorly drained soils. However, it has less cold tolerance than Tifton 85 or Coastal. Jiggs is easy to plant by tops, does not have many rhizomes, and does not produce as much as Coastal or Tifton 85 in a drought. Quality is more or less equal to that of Coastal. Jiggs has fine stems and it has been used for hay, haylage, and grazing.

**ESTABLISHMENT**

Establishment of a bermudagrass hay field or pasture is a major expense. Producers should do all that is possible to ensure success.

The following suggestions may be helpful in successfully establishing bermudagrasses.

1. **Site Selection and Land Preparation:** a) Choose a reasonably well-drained soil; b) destroy common bermudagrass and other weeds by keeping the soil cultivated repeatedly over an extended time period, especially during dry weather. It may be preferable to spray spots of common bermudagrass with Roundup® herbicide in the growing season prior to establishment.

2. **Lime and Fertilization:** Raise soil pH to 5.5–6.0 by liming. Use dolomitic limestone if a soil test indicates a need for magnesium. If in the future you plan to overseed your bermudagrass with a small grain or ryegrass, adjust the pH to 6.0 and to 6.5 for clovers. For sandy soils, apply soil test recommended rates of phosphorus (P) and potassium (K), along with 30 pounds of nitrogen per acre as soon as the bermudagrass plants start to grow. Apply an additional 70 pounds of nitrogen per acre and one-half of the recommended potassium when stolons (runners) begin to develop.

3. **Time of Planting:** The improved hybrid bermudagrasses do not produce sufficient seed and must be established from vegetative plant parts (either tops or sprigs). The tops are the aboveground green stems. The sprigs are the underground stems or rhizomes. Dug sprigs, consisting of underground rhizomes, plant crowns and stolons, can be planted from mid-February through July. Sprigging bermudagrass in mid to late winter before it starts growing (before breaking dormancy) is encouraged. Sprigs dug in early spring after the plants have broken dormancy will have lower levels of energy reserves. Energy reserves are needed to initiate and develop new shoots (sprouts). Also, soil moisture is usually more favorable in late winter as compared to spring (April-May). In the spring, when top growth reaches four to six inches, digging and planting of sprigs should be delayed until after the first hay harvest or harvest of tops for planting. Tops (green stems) can be planted in June and July.
When planting tops, use material that is mature and has six weeks or more of growth. Try to plant during a cloudy, rainy period. Moisture conditions must be ideal for this method to succeed. The soil becomes very hot during clear, bright summer days, and the planting material can either dry out or “scald.” This seems to be more of a problem with tops than with dug sprigs. Also, chances of success when using tops are likely greater when planting on flatwoods as compared to upland deep sands.

If possible, all plantings should be completed no later than mid-August. Fall plantings have been successful in some years in peninsular Florida, but as a general rule fall planting is not recommended because of the possibility of damage from drought or an early freeze. Young plants should be allowed plenty of time (three months) to develop a strong root system before cold weather.

4. Planting Material: Obtain planting material (sprigs or tops) from nurseries that are pure as to variety and free from common bermudagrass or other weedy grasses. Plant fresh, pure, live sprigs or freshly cut tops that are six weeks old or older. Planting material should receive 35-50 pounds of N fertilizer per acre two weeks before it is harvested to induce a flush of new tillers. Sprigs can be dug with a commercial sprig digger. They can also be harvested by using a spring-tooth harrow or field cultivator, along with a side delivery rake and pitchfork. Green tops can be harvested with conventional hay equipment. Balers can be adjusted to form small bales that will weigh whatever is needed for ease of handling. Green bales should be moved and planted quickly before they go through a heating cycle.

5. Planting rate: Plant 30–40 bushels of dug sprigs or approximately 1500 pounds of tops per acre. Higher planting rates can be used to ensure rapid development of a good stand if planting material is readily available or low in cost. One bushel is 1.25 cubic feet.

6. Planting Method: Always plant in a well prepared, weed-free, moist seedbed. Land that has been turned with a moldboard plow or has received other primary tillage should be smoothed with a disk harrow to destroy germinating weed seeds just ahead of the planter. Dug sprigs can be planted with commercial sprig planters that place the sprigs in the soil two to three inches deep. Tree planters and other machines have also been used. Both dug sprigs and tops can be broadcast on the surface with a spinner-type grass planter (slinger). Other planting devices are also available that broadcast large roll bales of green tops. The planting material should be immediately covered with a disk harrow to a depth of 2–3 inches. Long tops (stems) can also be pushed into the soil with a “fairway” type roller called a crimper. Pack the soil with a heavy roller so that soil capillarity can be established, which will keep the soil moist around the planting material.

7. Establishment Weed Control: Spray immediately after planting (same day) with 2 lb/acre of 2,4-D or other suitable preemergence herbicide. In 30–40 days after planting, an application of 2,4-D, or other similar herbicide, may be needed for control of any broadleaf weeds that escaped the initial herbicide treatment. Contact your county agricultural agent for updates on herbicide recommendations. These can be found in the “Weed Control Guide” or in the publication “Weed Control in Pastures and Rangeland.”

With sustained soil moisture, good weed control, and adequate fertility, bermudagrass can be established in three months and ready for the first hay harvest or light grazing. Late plantings should not be harvested, but allowed to go through the winter with plenty of top growth.

When a producer intends to establish a large acreage it may be wise to first establish a smaller area of pure weed-free grass as a nursery. From the nursery the producer can harvest planting material for additional plantings. This practice spreads the risk of establishment failure over more than one season.

**FERTILIZATION FOR HAY AND GRAZING**

Bermudagrasses require fertilization or high soil nutrients to produce high yields. They are very responsive to nitrogen. The initial application of fertilizer each year should be applied when the grass starts growing, which is usually in March (February in South Florida). For hay production apply 80 pounds of nitrogen per acre and soil test recommended amounts of P & K in early spring. After each cutting, except the last in the fall, apply an additional 80 lb N, and 40 lb K, O/a, along with 20 lb P, O/A if the soil tested low or medium in P. For grazing apply 80 pounds of nitrogen per acre and soil test recommended amounts of P & K. An additional 80 pounds of N can be applied mid-season if needed. Sulfur is not recommended, and in most situations a growth response to sulfur would not be expected. As insurance against a potential sulfur deficiency, some producers are applying part of their nitrogen as ammonium sulfate, but a premium should not be paid for this source of nitrogen, relative to that of other nitrogen sources, simply for the insurance against a potential sulfur deficiency. If manure is used as a fertilizer, it will supply...
sulfur. The need for routine use of micronutrients has not been demonstrated.

When using manure, if possible, determine the nutrient content of the manure being used and then apply the manure in amounts needed to supply the N, P, K nutrient recommendations. Additional N or K may be needed to supplement the manure.

With the use of high nitrogen rates, pH will decrease over time. Ammonium sulfate lowers pH faster than other sources of nitrogen. Use annual soil testing to follow the decrease in pH and to determine P and K levels. A good time to take soil samples is in the fall after the last hay harvest. Be especially careful not to fall behind in potassium application. Low potassium levels have resulted in thinning of stands.

Bermudagrass is especially responsive to nitrogen. Table 1 presents estimates of crude protein and dry matter yield (3%-5% moisture hay) for increasing amounts of nitrogen applied. Estimates of nitrogen removal in the harvested crop are also given.

**HAY MANAGEMENT**

The first hay harvest should be made when there is enough forage to justify equipment use. At this time the grass may be 14-16 inches high.

Try to take the first harvest before summer rains start. Be ready to take each successive harvest at four weeks of regrowth. If the weather does not allow harvest at four weeks, harvest at five or six weeks. Maximum yield is usually obtained with a six week schedule. However, waiting until six weeks to harvest may result in further delays due to rain. If harvest is delayed beyond six weeks, quality (digestibility and protein) decreases rapidly. The effect of cutting interval on hay quality is shown in Table 2 and Table 3.

Animal intake is higher and gain per animal is greater with bermudagrass that is four weeks old when harvested. Cutting interval, or age of forage when harvested, affects both digestibility and protein level. Both decrease as cutting interval increases. High rates of nitrogen fertilizer will tend to raise the protein level. Make every effort to avoid rain when cutting, drying, and baling the hay. If the hay is rained on, use a tedder after the rain to help speed drying. A heavy rain will leach some soluble sugars out of the leaves, thus reducing the quality of the hay to some extent. A greater problem may be the growth of molds and other rotting organisms if the rain continues for several days or if the grass is baled too wet.

Hay producers can use an electronic moisture tester to determine when the grass is dry enough to bale. The moisture content should be at 15% or lower before baling in order to prevent the growth of molds and heating. Bales that are too wet can present a fire hazard through spontaneous combustion. Some producers have used hay preservatives (organic acids) that inhibit the growth of molds. This allows them to bale at moisture levels up to about 22%. The preservative is applied to the grass as it enters the bale chamber.

When frequent rainfall does not permit drying and conserving the grass as hay, roll bale silage may be an alternative to consider. The roll bale silage system uses a conventional large round baler to roll up wet grass (50% moisture). The bale is then either wrapped in stretch plastic or stacked in a long horizontal plastic tube to exclude oxygen. This requires a special machine to apply the plastic wrap or to stack bales in the tube. Because of extra expense, the roll bale silage system should only be used to conserve young high-quality grass and only when the weather is too wet to make hay.

Bermudagrass can be conserved by using a conventional silage system (field chopper, wagons, silos). Such a system requires considerable investment in equipment, but it is being used successfully by large dairy operations throughout the state. The big advantage of a silage system is that it is not weather dependent. Grass can be harvested on a four to five week schedule.
GRAZING MANAGEMENT

Management of bermudagrass for grazing is somewhat similar to that for hay. Young immature grass is more nutritious than old mature grass.

Heavier fertilization (more than 50 lbs N/acre), rotational grazing, and mowing as needed to keep the grass young and tender will result in highest animal production. Having the bermudagrass area divided into several pastures will allow for rotational grazing and for mechanical harvest of excess production during the summer as hay or silage.

A three-year grazing study was conducted at the Georgia Coastal Plain Experiment Station where yearling beef steers were used to compare Tifton 85 with Tifton 78. Both are high yielding, high quality hybrid bermudagrasses. This study (Table 4) shows the potential for high animal gain that can be obtained from well-fertilized hybrid bermudagrass.

Average daily gain was similar for Tifton 78 and Tifton 85, but Tifton 85 produced 46% higher liveweight gain per acre compared to Tifton 78. Additional steers were added to the Tifton 85 pastures during the summer to utilize the extra forage produced.

INSECTS

Armyworms, striped grass loopers, and grasshoppers may occasionally be a problem usually in the summer and fall and especially on bermudagrass fields that have been recently fertilized. These insects feed on the leaves and can completely strip a field of bermuda grass if not detected in time. If an infested field is to be harvested for hay and the grass is long enough when infestation occurs, go ahead and harvest. If it can be utilized by grazing, do so. But if the grass is not ready to be harvested, an insecticide can be used to control the worms. Insecticides work best if applied when the worms are small. It is probably a good idea to check bermudagrass fields for worms during the summer and fall by walking the fields on a weekly basis and watching for cattle egrets and other birds that might be feeding on the worms.

Spittlebug is another insect that can damage bermudagrass in wet weather. The presence of the insect is indicated by a white froth or spittle-like material at the base of the plant which contains the young immature insect. Adults emerge from the froth as dark brown or black flying insects that are about 3/8 of an inch long with two orange-red lines across the wings. Spittlebugs appear in June and late August. When feeding, the adults and immature stages inject a toxin into the plant that causes the leaves to turn brown and look frosted. The affected areas enlarge as the adults spread and feed. Mowing or grazing to keep the grass from growing tall, lodging, and becoming densely matted.
will prevent most spittlebug problems. Burning of the bermudagrass in February or just prior to "green up" will help to control spittlebug by killing the over-wintering eggs and early immature stages of the insect. There is a small risk involved when this practice is used on a less cold tolerant variety such as Coastcross-1. Burning will stimulate the grass to start growing earlier and faster. If a late hard freeze in March hits this young tender growth, the plant could be killed. Use of insecticides is usually not feasible. The young insects are protected by the spittle mass and the insecticide must be timed to contact the adults in either June or September to be effective, which means the grass must be grazed short or mechanically harvested. Contact your county extension agricultural agent for the latest update on recommended insecticides.

Chinch bugs infest bermudagrass pastures in dry years and prefer thin stands of grass. The adult chinch bug has white wing covers, each with a black triangle in the middle of the outer margin. The nymphs are reddish with a white band across the back whereas older nymphs are reddish brown with a white band. The mixture of nymphs and adults give the appearance of red-black-white ants emerging on grass thatch during a soap flush. The chinch bug overwinters as adults and larger nymphs in the thatch of infested fields. Activity resumes in the spring when temperatures exceed 60°F and bugs suck juice from the plant. Heavily infested areas turn yellow and then brown. After depletion of green tissue in one area, the chinch bugs migrate to new areas causing an expansion of damaged section. When appropriate insecticide is used for control, it is recommended that the damaged area plus a 20-ft of green border around it be sprayed.

**DISEASES**

Diseases are usually not a serious problem as long as the grass is harvested on a four to five week schedule. *Helminthosporium* is the most common disease found on bermudagrasses, and large areas of what appears to be frosted grass may develop in the field. Keeping the potassium levels up, burning the fields just before green up, and harvesting the grass on a regular schedule will help prevent the occurrence of this disease.
### Table 1. Estimates of crude protein, dry matter yield, and nitrogen removal for bermudagrass harvested every six weeks.\(^1\)

<table>
<thead>
<tr>
<th>Applied N (lb/acre) (^2)</th>
<th>Crude Protein (%)</th>
<th>Optimum Season</th>
<th>Dry season</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Dry Matter (tons/acre)</td>
<td>N Removal (lb/acre)</td>
</tr>
<tr>
<td>100</td>
<td>9.2</td>
<td>5.0</td>
<td>75</td>
</tr>
<tr>
<td>200</td>
<td>11.0</td>
<td>7.0</td>
<td>250</td>
</tr>
<tr>
<td>300</td>
<td>12.2</td>
<td>8.8</td>
<td>340</td>
</tr>
<tr>
<td>400</td>
<td>13.1</td>
<td>9.8</td>
<td>410</td>
</tr>
<tr>
<td>500</td>
<td>13.8</td>
<td>10.4</td>
<td>460</td>
</tr>
</tbody>
</table>

\(^1\) University of Florida, IFAS, Circular 938, “Estimation of bermudagrass production in Florida” by A. R. Overman et al.

\(^2\) Applied in split applications over growing season.

### Table 2. Effect of cutting intervals on dry matter intake, digestibility, and daily gain per animal of Coastal bermudagrass hay (Ga).\(^1\)

<table>
<thead>
<tr>
<th>Cutting Interval (weeks)</th>
<th>Dry Matter Intake (lb/day)</th>
<th>Forage Digestibility (%)</th>
<th>Average Daily Gain (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>11.8</td>
<td>55</td>
<td>1.2</td>
</tr>
<tr>
<td>8</td>
<td>9.3</td>
<td>53</td>
<td>0.9</td>
</tr>
<tr>
<td>13</td>
<td>9.5</td>
<td>45</td>
<td>0.0</td>
</tr>
</tbody>
</table>

\(^1\) From Circular 557, University of Florida Cooperative Extension Service, Wright et al.

### Table 3. Effect of maturity on crude protein (CP), total digestible nutrients, and quality index of bermudagrasses. \(^1\)

<table>
<thead>
<tr>
<th>Weeks of Regrowth</th>
<th>CP(^2)</th>
<th>TDN(^3)</th>
<th>Quality Index(^4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>16.0</td>
<td>56.3</td>
<td>1.38</td>
</tr>
<tr>
<td>4</td>
<td>13.6</td>
<td>57.1</td>
<td>1.34</td>
</tr>
<tr>
<td>6</td>
<td>10.9</td>
<td>52.6</td>
<td>1.21</td>
</tr>
<tr>
<td>8</td>
<td>7.5</td>
<td>47.9</td>
<td>1.00</td>
</tr>
<tr>
<td>10</td>
<td>8.3</td>
<td>46.1</td>
<td>0.92</td>
</tr>
</tbody>
</table>

\(^1\) Data summarized from several experiments, University of Florida.

\(^2\) Percent of dry matter (Source: John E. Moore, University of Florida).

\(^3\) Quality Index is voluntary intake of TDN as a multiple of maintenance.

### Table 4. Three-year performance of steers grazing Tifton 78 or Tifton 85 pastures. \(^1\)

<table>
<thead>
<tr>
<th>Grass</th>
<th>Steer Grazing Days per acre</th>
<th>Live Weight Gain (lb/acre)</th>
<th>Average Daily Gain (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tifton 85</td>
<td>704</td>
<td>1032</td>
<td>1.47</td>
</tr>
<tr>
<td>Tifton 78</td>
<td>534</td>
<td>738</td>
<td>1.43</td>
</tr>
</tbody>
</table>

\(^1\) Data from G. M. Hill, et al. (1993) Journal of Animal Science 71:3219. Fertilized annually with 225 pounds of nitrogen in 3 split applications plus adequate P and K. Pastures were grazed from April to October.
Appendix D: Bahiagrass - Overview and Management

Bahiagrass (Paspalum notatum): Overview and Management
Yoana Newman, Joao Vendramini, and Ann Blount

Bahiagrass is the most common and widely used warm-season perennial grass in Florida. It is planted over two million acres in the state and over four million acres in the Southeastern United States. This grass is popular in Florida because of its adaptation to low soil fertility and low input management. Bahiagrass can be established by seed and thus provides easy propagation. It is used mainly for pasture and hay production with intermediate yield and acceptable animal performance. Additional uses include wildlife habitat, erosion control, phytoremediation of phosphorus-impacted soils, and integrated pest management of nematodes and fungal diseases when used in rotation with annual crops.

This publication provides an overview of the grass and details of management and production.

Originally from South America, bahiagrass is well adapted to coastal areas in Florida and the Coastal Plains in the Southern U.S., including Georgia, Alabama, Mississippi, Louisiana, and East Texas. It establishes well in sandy soils with low water retention and low fertility, and tolerates drought, sporadic flooding, and continuous grazing.

Bahiagrass is a dense, tufted grass with leaves that are crowded at the base and shallow, but sturdy, underground stems (rhizomes). It can grow 12–25 inches tall in a prostrate habit, and the seedhead has typically a two-branched raceme with protruding anthers for pollen production with characteristic purple coloration (Fig. 2). Reproduction is by seed, and bahiagrass spreads vegetatively by short, heavy runners (stolons). Genetically, there are two types or two ploidy levels found in this species that are cultivated:

Figure 1.


2. Yoana Newman, assistant professor, Agronomy Department; Joao Vendramini, assistant professor, Agronomy Department, Range Cattle Research and Education Center–Okeechobee; Ann Blount, professor, Agronomy Department, North Florida Research and Education Center–Marianna; Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

The use of trade names in this publication is solely for the purpose of providing specific information. UF/IFAS does not guarantee or warranty the products named, and references to them in this publication do not signify our approval to the exclusion of other products of suitable composition. All chemicals should be used in accordance with directions on the manufacturer’s label. Use pesticides safely. Read and follow directions on the manufacturer’s label.

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution authorized to provide research, educational information and other services only to individuals on the basis of their interest and need for such services, without regard to race, age, color, sex, national origin, disability, handicap, religion, marital status, familial status, sexual orientation, or gender identity. UF/IFAS Cooperative Extension Service, University of Florida, IFAS, Florida A&M University Cooperative Extension Program, and Boards of County Commissioners cooperating. Millie Ferrer-Chancy, Interim Dean.
diploids and tetraploids, and these will be discussed in the next section.

Bahiagrass is best adapted to sandy loams and tolerates low fertility and low pH. It grows well on soils with acidic pH from 4.5 to 6.5, and the target soil pH is 5.5. At pH greater than 6.5, the grass shows chlorosis and stunted growth. It survives well on droughty soils where it presents a more open stand to compensate for the low moisture available.

Bahiagrass grows vigorously under high temperature and long days, and herbage production is greatest from April to October. More than 85% of the production occurs during the six warmest months (April through September).

**History and Released Cultivars**

The center of origin of this grass is subtropical South America. It is abundant in northern Argentina, Brazil, Eastern Bolivia, and Paraguay. In Florida, bahiagrass has a century-long history as "common" bahiagrass. It was first introduced by the Bureau of Plant Industry and grown by the Florida Agricultural Experiment Station in 1913.

Since the initial release, new cultivars have been adopted. The most popular cultivars are the diploid ones including Pensacola, Tifton 9, TifQuik, and UF-Riata. The tetraploids are Paraguay, Argentine, and "common."

**Bahiagrass Introductions:**

**Pensacola**—Thought to originate from the Santa Fe Province of Argentina, this grass arrived in the Pensacola area of Florida as ship ballast in the 1920s. This variety was identified in 1938 by E. H. Finlayson, Escambia County Extension Agent. He collected and distributed seed of this bahiagrass and promoted it for pastures and land conservation. Pensacola bahiagrass has narrow leaves, good seed production, and is very persistent under intensive grazing. It is more cold tolerant than most tetraploid types. Most bahiagrass pastures in the Southeastern U.S. today are Pensacola bahiagrass, and 60% of the bahiagrass acreage in Florida is estimated to be Pensacola.

**Tifton 9**—This cultivar was developed and released by the University of Georgia and the U.S. Department of Agriculture (USDA) in 1989 by Glenn Burton. Tifton 9 is a selection from Pensacola that was found to have superior yields in early spring and late fall. Tifton 9 is estimated to occupy 10% of the bahiagrass acreage in Florida.

**TifQuik**—This cultivar, recently released by the USDA and the University of Georgia, has fewer hard seeds and results in a more rapid or "quick" stand establishment. In the spring, it grows faster than Tifton 9 or Pensacola because of increased seedling emergence.

**UF-Riata**—The University of Florida released this cultivar in 2007. UF-Riata was selected from Pensacola for further improvement in early spring and late fall production, and its longer period of forage production extends grazing into late fall and early spring in areas where bahiagrass is adapted.

**Common**—This bahiagrass has prostrate growth habit, is cold sensitive, good at spreading, and is persistent under grazing.

**Paraguay and Paraguay 22**—These ecotypes were plant introductions from Paraguay; they are more upright than common bahiagrass but are not routinely used in pastures. Very few acres planted to Paraguay 22 remain in Florida.

**Argentine**—This ecotype from Argentina is highly productive with excellent spreading, lower seedhead production, but it has less frost and cold tolerance than Pensacola. It is estimated that Argentine makes up 25% of total bahiagrass acreage in Florida.

**Wilmington**—Collected in coastal North Carolina, it has more narrow leaves than typical tetraploid bahiagrass introductions, darker green color and is adapted to higher latitudes. It has turf potential.
Appendix D: Bahiagrass – Overview and Management

**Yield**

Bahiagrass herbage production is greatest under the combination of high temperature, moisture, and long days. Annual production ranges from 3,000 to 10,000 lb/acre, depending on soil fertility and moisture conditions. Under highly fertilized management, yields of 12,000–14,000 lb/acre may be obtained. In South Florida—under warmer conditions and a mild winter—production is usually 30% or more than that reported in Central and North Florida.

As stated previously, bahiagrass growth is affected by temperature and rainfall. During the months of March, April, and May, the temperatures may be adequate for bahiagrass, but the herbage mass is limited by rainfall. The production will be more limited in areas where soils are predominantly composed of fine sands.

Research reports have shown that rotational grazing will result in greater productivity than continuous stocking (approximately 60 vs. 40 lb/acre of dry matter per day). However, nutritive value is not affected by grazing method.

**Nutritive Value**

Energy concentration of bahiagrass—which is reflected in digestibility of the herbage—declines considerably as the season progresses (Table 1), regardless of fertility or defoliation management. Different studies show that well-fertilized bahiagrass remains at 10%–12% crude protein (CP).

As a result, bahiagrass is not well suited to support demands of livestock with high nutritional requirements, such as growing animals or lactating dairy cows.

Concentrations for phosphorus (P) in leaf tissue may range from 0.15% to 0.4%, and for potassium (K), may range from 1.2% to 2.5%. If the leaf concentrations of phosphorus drop below 0.15%, or 1.2% for potassium, the addition of fertilizer will be necessary to maintain adequate herbage production.

**Animal Performance**

Average daily gains (ADG; lb of live weight gained per day) of bahiagrass are usually lower than other warm-season perennial grasses such as limpopgrass or bermudagrass. Studies on continuously grazed (continuous stocking) bahiagrass pastures have ADG of crossbred yearling heifers ranging from 0.3 to 1.2 lb/day. However, these numbers generally decline from summer to fall. The ADG in summer will often range from 1.2 to 1.3 lb/day in June–July, 0.4 to 0.3 lb/day in August–September and lower (0.2) in September. When pastures are understocked in the summer, daily gains are usually low, associated with overmature growth.

**Planting**

Bahiagrass planting is by seed. Areas selected for planting should have good soil moisture and be well drained. Renovation and replanting of pastures is common, but if planting new sites to Tifton-9 bahiagrass, the ideal planting site would be one that has not already been planted with bahiagrass, such as a Bermudagrass or crop field.

In Florida, it is best to establish bahiagrass during the rainy season (June–August). However, if irrigation is available, bahiagrass can be planted as early as March and possibly earlier in South Florida if warm temperatures are present. Better results are obtained if planting in March since bahiagrass will come up before crabgrass and other summer annuals. When planting without irrigation, late March through early May in Florida should be avoided as these are usually drier months compared to those in the summer. If targeting establishment with only summer rains, seedbed preparation should be initiated two months prior to planting (April–May). Control weeds first (see “Weed Control” section), and once weeds are controlled and seedlings emerged, apply fertilizer following the soil test recommendations as detailed below.

After the seedbed is prepared and before broadcasting the seed, pack the soil with a roller to seal in the moisture. Next, plant the seed ¼ to ½ of an inch deep. Beware that a common mistake with bahiagrass planting is burying the seed too deep. Using a cultipacker planter or any precision seeder helps in placing the seed at a uniform depth.

Use sufficient seed. The higher the seeding rate, the quicker the stand will close, and the opportunity for weeds to fill in the open areas will be minimized. After seeding, pack the soil with a roller to seal the moisture in the soil.

The weed control in bahiagrass at seeding stage needs to be done mechanically by mowing. From emergence to approximately six inches in height (seedling stage), bahiagrass does not tolerate most herbicides.

Light fertilization of bahiagrass will generally be necessary within 7–10 days after seeding emergence. The initial application should consist of 30 lb nitrogen (N)/acre, all of the recommended P2O5, and 50% of the recommended K2O. Approximately 40–50 days after the initial application, an additional 50 lbs of nitrogen and the remaining K2O should

59 of 83
be applied. If manure or biosolids are used as the main source of nutrients, apply the entire annual application at one time after the plants are large enough to withstand physical damage from the application.

Table 2. Bahiagrass Seeding Rates

<table>
<thead>
<tr>
<th>Variety</th>
<th>Seeding Rates (lb/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pensacola</td>
<td>20-30</td>
</tr>
<tr>
<td>Argentine</td>
<td>20-30</td>
</tr>
<tr>
<td>Tifton 9</td>
<td>15-20</td>
</tr>
<tr>
<td>UF-Riata</td>
<td>15-20</td>
</tr>
<tr>
<td>TifQuik</td>
<td>15-20</td>
</tr>
</tbody>
</table>

Adapted from data from Newman et al. 2008, University of Florida

Well-fertilized plants will form a dense stand in 60–90 days, at which time a light grazing or mowing can be done.

Management

A. Fertilizer and Liming Recommendations

Liming is needed only when soil pH is below the recommended target pH of 5.5. Lime as needed three to six months prior to fertilization to allow for the lime to react with the soil. Test your soil pH every two to three years.

1. FERTILIZATION FOR GRAZED PASTURES

In Florida, special attention should be given to phosphorus fertilization in order to avoid environmental problems associated with phosphorus losses. A soil test in combination with tissue analysis should be used to determine if phosphorus fertilization is needed. A soil test alone is not adequate to determine bahiagrass phosphorus needs, and producers are encouraged to submit both a soil test and a tissue sample. For information on how to submit a tissue sample, see IFAS publication SL 252, Tissue Analysis as a Nutrient Management Tool for Bahiagrass Pastures (http://edis.ifas.ufl.edu/ss475).

Nitrogen is the nutrient that is most limiting to bahiagrass growth, so producers should first consider needs and how much nitrogen they can afford. A medium nitrogen option for grazed, established stands is to apply 100 lb N/acre. The application should be split in two, and the first 50 lb N/acre and all of the soil-test recommended P₂O₅ and K₂O levels should be applied in early spring. The second 50 lb N/acre should be applied in early summer. For a minimum fertilization alternative, apply 50–60 lb N/acre in the early spring to maximize much-needed forage. Do not apply K since N will be the limiting nutrient that the bahiagrass is dependent upon in this low-cost option. Apply 25 lb P₂O₅/acre if your soil tests “Very Low” or “Low” in P and tissue P concentration is below 0.15%. Do not apply P if tissue P concentration is at or above 0.15%, even if the soil tests “Very Low” or “Low” in P. For “Medium” and “High” soil P levels, neither P application nor tissue analysis is recommended since there will be no added benefit of P fertilization on bahiagrass yields.

2. FERTILIZATION FOR HAY PRODUCTION ONLY

Apply 80 lb N/acre in early spring. Also in spring, apply 80 lb K₂O/acre if your soil tests “Very Low” or “Low” in K and 40 lb K₂O/acre if it tests “Medium.” Apply 40 lb P₂O₅/acre if your soil tests “Very Low” or “Low” in P and tissue P concentration is below 0.15%. Apply an additional 80 lb N and 40 lb K₂O/acre after each cutting, except the last in the fall. Include 20 lb of P₂O₅/acre after each cutting if the soil tested “Very Low” or “Low” in P.

3. FERTILIZATION FOR SEED PRODUCTION

Apply 60 to 80 lb N/acre in February or March. The same time, apply 80 lb K₂O/acre if your soil tests “Very Low” or “Low” in K and 40 lb K₂O/acre if it tests “Medium.” Apply 40 lb P₂O₅/acre if your soil tests “Very Low” or “Low” in P and tissue P concentration is below 0.15%. Graze until May, June, or July, depending on variety. Remove cattle before seedheads start to emerge, and apply an additional 60–80 lb N/acre.

If the bahiagrass is not grazed, do not apply fertilizer in February or March since this may stimulate excessive top growth. Mowing from February to April may be needed to remove excessive top growth. Apply 60–80 lb N/acre before seedheads first appear. Apply 25 lb P₂O₅/acre if your soil tests “Very Low” or “Low” in P and tissue P concentration is below 0.15%. Do not apply P if tissue P concentration is at or above 0.15%, even if the soil tests “Very Low” or “Low” in P. For “Medium” and “High” soil P levels, neither P application nor tissue analysis is recommended. Apply 50 lb K₂O/acre if your soil tests “Very Low” or “Low” in K and none if it tests “Medium” or “High.” Fertilize Pensacola and Tifton 9 in March/April and Argentine in May/June.

For additional information about bahiagrass fertilization, see IFAS publication SL 129, UF/IFAS Standardized
Appendix D: Bahiagrass – Overview and Management

B. Weed Control

Bahiagrass seedlings are susceptible to phenoxy-type herbicides (2,4-D, dicamba, others), and they should not be applied until seedlings are at least six inches tall.

Another caution: Pensacola-type (Pensacola, Tifton 9, UF-Riata, and TifQuik) bahiagrass will be severely injured by the herbicide metsulfuron. When Pensacola bahiagrass is a weed in a bermudagrass pasture, metsulfuron will selectively and effectively remove bahiagrass without harming bermudagrass.

Bahiagrass pastures that are well fertilized and growing under optimal conditions will be competitive with weeds. However, many ranchers in Florida use low fertility management, which may require additional intervention for weed control. Most broadleaf weeds can be controlled with dicamba (brand names are Banvel, Clarity, or Vanquish), 2,4-D (several brands) or a combination of the two. Sulfosulfuron (brand name: Outrider) can be applied to established pastures for control of annual or perennial sedges. Hexazinone (brand name: Velpar) is used for smutgrass control, but sprays of this herbicide will need to be kept away from desirable trees, especially oaks. To control specific weeds there are many options. For more information, see IFAS publication SS-AGR-08, Weed Management in Pastures and Range/ami (http://edis.ifas.ufl.edu/wg006).

C. Grazing Management

Bahiagrass is a highly persistent grass that has high tiller, rhizome, and root density. Because of its rhizomes, bahiagrass is able to withstand close defoliation. The stubble height in midsummer season should be approximately two inches for hay production, three inches if rotational grazing, and five inches if under continuous stocking. There is plenty of evidence that shows that when pastures are overgrazed and close grazing continues, the bahiagrass will become weak and stand loss will eventually occur.

On the other hand, rapid growth of bahiagrass is associated with rapid decline in nutritive value. By increasing the stocking during rapid growth of bahiagrass, excess old growth would be avoided. Also, the improvement of forage crude protein and digestibility, as well as the better performance of cows and calves will likely occur.

D. Association with Legumes

In late fall, bahiagrass can be overseeded with annual ryegrass, small grains, or clovers. In North and Central Florida, annual ryegrass, small grains, crimson, white, ball, berseem, and red clover, and medics are recommended, while berseem clover can be used in Central and South Central Florida. Because of the dense nature of bahiagrass sod, competition from bahiagrass needs to be suppressed or minimized before overseeding with the legumes. A common practice is to graze it very short as the fall season approaches and afterwards do a light disking of the soil to suppress bahiagrass competition with legume seedlings. Another practice is to burn the pasture with herbicide (chemical mowing), but this practice is risky and often results in stand loss.

During the summer, companion legumes to bahiagrass are Aeschynomene and carpon desmodium since these species are well adapted to moist, flatwood soils. Other possible companion legumes are alcyeclover, cowpeas, hairy indigo, stylo, and perennial peanut; these require good moisture and adequate soil drainage.

Utilization

A. Hay

Bahiagrass that is well fertilized and cut prior to seedhead production will make good quality hay. The quality of the grass drops dramatically once the seedheads are present.

Tifton 9, TifQuik, and UF-Riata have a more upright growth and are recommended for producers who want to
grow bahiagrass exclusively as a hay crop. These varieties produce long leaves and a lot of herbage mass.

**B. Phytoremediation**

Intensively managing bahiagrass for hay or sod production is an option for remediating P-impacted soils due to the increased yields that can be achieved with N fertilization. Studies have shown that yield increases about 70% with N applications at the IFAS recommended rate of 60 lb/acre harvest. Research reports also show that application of N fertilizer increases bahiagrass P uptake and consequently decreases P losses to groundwater.

![Round bales and square bales of bahiagrass hay.](figure4.jpg)

Cumulative P removals by bahiagrass under hay production management for a two-year period have been reported at 16 lb P<sub>2</sub>O<sub>5</sub>/acre (with no nitrogen fertilizer application) to 50 lb P<sub>2</sub>O<sub>5</sub>/acre when bahiagrass was fertilized at the recommended IFAS rate of 60 lb N/acre/harvest. If plant tissue phosphorus is at a high of 0.35% and eight tons of dry matter is produced, approximately 50 lb of phosphorus/acre/year would be removed. Well-managed bahiagrass supplied with adequate N fertilizer for hay production could offer a practical and cost-effective alternative for reducing offsite phosphorus losses from phosphorus-impacted soils.

When managed for sod production, significant P removal can be obtained. For information about P removal from sod, see IFAS publication SL 309, *Phosphorus Removal Rates from Sod Production Systems* (http://edis.ifas.ufl.edu/ss521).

**C. Turf and Conservation (Sod)**

Bahiagrass can make excellent low-maintenance lawns. It forms an extensive and deep root system that makes this grass drought-tolerant and desirable for sod production.

![Peanut crop after bahiagrass.](figure5.jpg)

With escalating urbanization in Florida, many ranches are increasing their acreage for commercial sod production.

Argentine bahiagrass is a preferred variety and used broadly for turf production because of its low height, wide leaves, and dark green color, but mainly because it produces less seedheads than other bahiagrasses. For additional information, see IFAS publication BUL 260, *Sod Production in Florida* (http://edis.ifas.ufl.edu/lh066).

**D. Seed Production**

Bahiagrass seed from unprotected varieties (Argentine, Paraguay 22, and Pensacola) is produced regularly by some ranches to generate additional income. Frequently, seed companies harvest, process, and market the seed. Bahiagrass is an obligate, long-day plant that will produce the most inflorescences (seedheads) with long days. Argentine bahiagrass will flower only at day length greater than 13.8 hours in Florida.

Highest seed yields are obtained when herbage residue from the previous growing season is removed between late April and May and immediately fertilized. If residue is removed early or high N fertilizer is applied, more vegetative growth will occur with less flowering stems developing. Usually, the management of pastures for seed production requires fertilization in early spring and grazing until the longest days approach or the first signs of flowering occur in early June.

It is not legal to harvest and sell seed of varieties that are plant variety protected (PVP), such as TifTuf 9, TifQuik, or
These varieties are protected by federal seed laws and can only be sold by variety name. When purchasing seed of any variety of bahiagrass, it is always best to buy seed from a reputable seed source. Labels on the seed bag should indicate the state variety, % seed germination, date of testing, and purity.

**E. Sod-based Rotation with Agronomic Crops**

A recommended sod-based rotation with row crops is a four-year cropping system that includes two years of bahiagrass, followed by peanut and then cotton. This sod-based rotation, which replaces the traditional peanut/cotton rotation, has positive impacts on soil health, pest reduction, water use, and sustainable farm production. Studies conducted in North Florida have shown that this is a viable system for farms that are in the 100-800 acre range. More specifically, the suggested crop rotation is to grow two years of bahiagrass followed by an oat cover crop. Afterwards, the bahiagrass is killed off in the second year, next oat is planted into it, and then peanuts are strip-tilled the following warm season. Then oat is again used as a cover crop, and next cotton is planted before going back into bahiagrass. Cotton is not recommended right after bahiagrass because of reported excessive juvenile (rank) growth. Bahiagrass in the rotation can be grazed by cattle, sold as seed, or baled as hay.

Bahiagrass' extensive root system penetrates the natural compaction zone that exists at a depth of six to eight inches in most Southeastern coastal-region soils. The roots of the subsequent crop use the channels created by the bahiagrass sod. After bahiagrass, there can be a four- to six-fold increase in crop roots down to a soil depth of five feet. Nutrient extraction, especially nitrates, is also greatly enhanced when rooting depths are increased. When included in the peanut/cotton rotation, bahiagrass reduces nematode infestation since most nematodes will not feed on bahiagrass. With a limited food source, nematode levels decline to a point that will not cause economic damage when the host crop is planted.

For additional information, see IFAS publication SS-AGR-126, *Sod/Livestock-Based Peanut/Cotton Production System: Why We Recommend It!* (http://edis.ifas.ufl.edu/ag258).

**Insects and Plant Diseases**

Mole crickets can cause serious damage to bahiagrass pastures in Florida. There are three pest mole crickets (*Scapteriscus* spp.) found in Florida: the southern, tawny, and short-winged mole cricket. Of these three, the tawny is the most damaging. Fortunately, insecticidal-nematode control (*Steinernema scapterisci*) and biological control with a wasp (*Larva bicolor*) are available for controlling these mole crickets.

Bahiagrass is susceptible to "dollar spot" (*Sclerotinia homoeocarpa*) and "ergot" (*Claviceps paspali*) diseases in hot, damp weather conditions (July–early September). These diseases will affect seed and production yield, but in general, none of these diseases are toxic or a problem to livestock. However, if grass is heavily infected, pregnant mares may experience abortion, and cattle under stress might have some behavioral impact. If ergot is present, it can be managed by mowing the seedheads or by keeping pregnant horses confined. Dollar spot seems to have more severity in Pensacola-type bahiagrass than in Argentine.

**Summary**

- Bahiagrass is a warm-season plant adapted to areas of low soil fertility typical of Florida's deep, sandy soils. It does not grow well in pH 6.5 and higher.
- Bahiagrass production is highest during midsummer when days are long.
- Bahiagrass is low to medium in crude protein and digestibility.
- Pensacola and Argentine are recommended cultivars for grazing, Tifton 9 and UF-Riata are recommended for hay production, and UF-Riata is recommended for extending the production season in the fall.
- Mole crickets are a serious pest to bahiagrass, but biological control through nematodes and wasp parasites is effective.

**Additional Information**


---

**References**


Table 1. Pasture Nutritive Value (Digestibility and Crude Protein) and Herbage Mass of “Pensacola” Bahiagrass Pastures during the Grazing Season.

<table>
<thead>
<tr>
<th></th>
<th>Digestibility (%)</th>
<th>Crude Protein (%)</th>
<th>Herbage mass (lb DM/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>49</td>
<td>54</td>
<td>10</td>
</tr>
<tr>
<td>June</td>
<td>58</td>
<td>54</td>
<td>16</td>
</tr>
<tr>
<td>July</td>
<td>58</td>
<td>57</td>
<td>15</td>
</tr>
<tr>
<td>Aug</td>
<td>41</td>
<td>53</td>
<td>13</td>
</tr>
<tr>
<td>Sep</td>
<td>48</td>
<td>53</td>
<td>11</td>
</tr>
</tbody>
</table>

Data from Iyang et al. 2010, University of Florida
Appendix E: Resolution 09-099

RESOLUTION NO. 09-099

A RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS
OF POLK COUNTY, FLORIDA, WAIVING THE REQUIREMENT
THAT A PROPERTY OWNER FILE AN ANNUAL APPLICATION
OR STATEMENT FOR THE AGRICULTURAL CLASSIFICATION
OF PROPERTY AFTER AN INITIAL APPLICATION IS MADE AND
THE CLASSIFICATION IS MADE BY THE PROPERTY
APRAISER IN ACCORDANCE WITH FLORIDA STATUTE
SECTION 193.461 (3) (a); WAIVING THE NOTICE AND
CERTIFICATION REQUIREMENTS OF FLORIDA STATUTE
SECTION 193.461 (3) (e); MAKING FINDINGS; PROVIDING AN
EFFECTIVE DATE.

WHEREAS, the duly elected Property Appraiser of Polk County, Florida, Marsha
M. Faux (the "Appraiser"), requests that the Polk County Board of County
Commissioners (the "Board") waive the requirement that a property owner file an
annual application or statement for the agricultural classification of property after
an initial application is made and the classification is made by the property
appraiser in accordance with Florida Statute Section 193.461 (3) (a); and

WHEREAS, the Appraiser also requests that the Board waive the notice and
certification requirements of Florida Statute Section 193.461 (3) (e); and

WHEREAS, the requested waiver is anticipated to save the Appraiser's office
approximately $80,000.00 per year; and

WHEREAS, Polk County believes that it is in the public interest in light of the
difficult economic times to grant the waivers.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNTY
COMMISSION OF POLK COUNTY, FLORIDA:

SECTION 1. The foregoing findings are incorporated herein by reference and
made a part hereof.

SECTION 2. The Board hereby waives the requirement that a property owner file
an annual application or statement for the agricultural classification of property
after an initial application is made and the classification is made by the property
appraiser in accordance with Florida Statute section 193.461 (3) (a) and the
notice and certification requirements of Florida Statute Section 193.461 (3) (e).

SECTION 3. This resolution shall take effect immediately upon its passage.

PASSED AND CERTIFIED AS TO PASSAGE this 3rd day of June, AD,
2009.
Appendix F: Section 222 Agriculture (Polk County)

ORD No. 12–001

AN ORDINANCE OF THE POLK COUNTY BOARD OF COUNTY COMMISSIONERS REGARDING LAND DEVELOPMENT CODE AMENDMENT LDC 11T-09, AMENDING ORDINANCE NO. 00-09, AS AMENDED (ALSO KNOWN AS THE POLK COUNTY LAND DEVELOPMENT CODE), AMENDING SECTION 222, AGRICULTURAL, TO SPECIFICALLY ADDRESS LIVESTOCK AND FOWL IN RESIDENTIAL NEIGHBORHOODS, AMENDING SECTION 930, VARIANCES AND SPECIAL EXCEPTIONS, AND AMENDING CHAPTER 10 TO DEFINE LIVESTOCK AND FOWL; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

NOTE: The underlined text indicates proposed additions to the current language. The strikethrough indicates text to be removed from current ordinance.

NOW, THEREFORE, BE IT ORDAINED by the Board of County Commissioners of Polk County, Florida that:

SECTION 1:

Chapter 2, Section 222, Agricultural of the Polk County Land Development Code, Polk County Ordinance No. 00-09, as amended, is hereby amended in the following manner:

Section 222 Agricultural (Revised 01/30/03 - Ord. 03-14)

A. General Farming

Nothing herein shall prevent the use of any land for agricultural purposes, or the construction and use of buildings or structures incidental to that purpose. No conditional use permit or certificate shall be required for any new agricultural building or structure provided, however, no structure for the sheltering or feeding of animals (such as barns, stables, coups, aviaries, troughs or feeders) shall be permitted to be built within 25 feet 50 feet of a neighboring residential property boundary except within the A/RR, A/RRX, PM and CORE Future and Use districts.

B. Non-residential Farm Buildings (Revised 1/6/2010 – Ord. 10-002; 09/02/09 – Ord. 09-054):

Non-residential farming related buildings are not required to meet the standards of the Florida Building Code except as required by Chapter 553.73, F.S.

C. Farm Worker Housing (Revised 09/02/09 – Ord. 09-054):
Nothing in this code shall prohibit the use of a single-family, duplex, or multifamily unit from housing farm workers in the same manner as a family defined within Chapter 10 of this code.

D. Farming, General and Animal Grazing

Nothing herein shall prevent the use of any land for farming, general and animal grazing for bona fide agricultural purposes, or the good faith commercial agricultural use of land, as defined in Section 193.461, F.S. This shall be allowed in all land use classifications.

E. Livestock and Fowl in Residential Neighborhoods

This section is intended to address the balance between quality of life for residents and responsible animal husbandry in residential neighborhoods. Code enforcement action of this subsection (222.E) may be initiated only by complaint from an owner of residential property within 250 feet of the property on which livestock or fowl are contained. The following provisions apply to only residential properties less than ½ acre (21,780 square feet) in size and do not apply to any property within the A/RR, A/RRX, PM and CORE Future Land Use Map districts. These provisions do not apply to the good faith commercial agricultural use of land (bona fide agricultural purposes), as defined in Section 193.461, F.S.

1. Livestock shall be contained within fenced areas.

2. Fowl shall be kept in pens or fenced areas at least 50 feet from neighboring residential property lines.

3. The storage of animal waste shall be located at least 50 feet from neighboring residential property lines.

4. Show animals and educational projects shall be exempted from the requirements for pens in Section 222.E.2 provided the manure setback requirement in Section 222.E.3 can be met.

5. Relaxation of the standards set forth in this section may be approved by the Board of Adjustment through the process provided in Section 930 of this code.

SECTION 2:

Chapter 9, Section 930, Variances & Special Exceptions, paragraph B of the Polk County Land Development Code, Polk County Ordinance No. 00-09, as amended, is hereby amended in the following manner:

Section 930 Variances & Special Exceptions
Appendix F: Section 222 Agriculture – Polk County

B. Authority (Rev. 06/03/09 – Ord. 09-024; 02/16/05 - Ord. 05-05; 11/16/10 – Ord. 10-??)

Where there is no other form of relief available, the Board of Adjustment shall have the authority to grant variances or special exceptions from the terms and requirements of this Code relative to:

1. The dimensional requirements in Tables 2.2, 4.2, 4.4, 4.9, 4.13, 4.15, 4.17 and 5.3. Variances by the Board of Adjustment to density, floor area ratio and minimum lot size requirements are prohibited;

2. Section 207D, Temporary Mobile Home for Medical Hardship (special exception);

3. Section 211.B, Swimming Pool Enclosures

4. Section 214, Distance Between Buildings;

5. Section 215, Setbacks From Private Roads;

6. Section 216, Commercial Vehicle Parking and Storage (special exception);

7. Section 224, Alcohol Sales, (Distance requirements only)

8. Section 303, Communication Towers, Section 2 (Separation from Airports);

9. Section 401.04, US Highway 98 Selected Area Plan, the following subsections:
   a. 401.04.D.6.i
   b. 401.04.D.7.d
   c. 401.04.D.8.j

10. Section 610.D.4 & 6, (Setbacks)

11. Section 760, Signs (Setbacks and Height Only).

12. Section 761, Maximum Permissible Noise Levels by Land Use Designation

13. The linear distance measurement and height approved by Level 3 Review or Level 4 Review. Variances by the Board of Adjustment to density, floor area ratio and minimum lot size requirements are prohibited.

14. Section 222.E Livestock and Fowl in Residential Neighborhoods
SECTION 3:

Chapter 10, Definitions of the Polk County Land Development Code, Polk County Ordinance No. 00-09, as amended, is hereby amended to include the following terms and modifications:

LIVESTOCK: any domestic species of cattle, sheep, swine, goats, llamas, or horses, which are normally and have historically been kept and raised on farms in the United States, and used or intended for use as recreation, food or fiber, or for improving animal nutrition, breeding, management, or production efficiency, or for improving the quality of food or fiber.

FOWL: a flightless and primarily ground-feeding bird kept, raised, or bred for hobby or for its eggs or flesh.

SECTION 4: SEVERABILITY

If any provision of this Ordinance is held to be illegal, invalid, or unconstitutional by a court of competent jurisdiction the other provisions shall remain in full force and effect.

SECTION 5: EFFECTIVE DATE

This ordinance shall become effective upon filing with the Department of State.

ENACTED BY THE BOARD OF COUNTY COMMISSIONERS OF POLK COUNTY, FLORIDA this 11th day of January, 2012.
STATE OF FLORIDA

COUNTY OF POLK

I Richard M. Weiss, Clerk of the Board of County Commissioners of Polk County, Florida hereby certify that the foregoing is a true and correct copy of Ordinance No. 12-001 adopted by the Board on January 10, 2012.

WITNESS my hand and official seal of said Board this 11th day of January, 2012.

Richard M. Weiss
Clerk to the Board

By Kathryn Courtney
Deputy Clerk
January 18, 2012

Ms. Kathryn Courtney
Deputy Clerk
Polk County
Post Office Box 988
Bartow, Florida 33831-0988

Dear Ms. Courtney:

Pursuant to the provisions of Section 125.66, Florida Statutes, this will acknowledge receipt of your letter dated January 11, 2012 and certified copies of Polk County Ordinance Nos. 12-001 and 12-002, which were filed in this office on January 17, 2012.

Sincerely,

Liz Cloud
Program Administrator

LC/srd

RECEIVED

01-23-12 KC

Clerk Of The Board
Appendix G: Land Development Code – City of Frostproof

ORDINANCE 2011-05
AN ORDINANCE OF THE CITY OF FROSTPROOF, FLORIDA, AMENDING THE UNIFIED LAND DEVELOPMENT CODE OF THE CITY OF FROSTPROOF, FLORIDA; SPECIFICALLY, TO CHANGE THE TEXT OF ARTICLE 4, SECTIONS 4.06.02.01, 4.06.02.02, AND 4.06.02.03; AND ARTICLE 4, SECTION 4.10.00 – TABLE 4.10.01, TO ALLOW LIMITED AGRICULTURAL USES IN THE R-1A, R-1B, R-1C, AND R-1D ZONING DISTRICTS; AND AMENDING ARTICLE 2, DEFINITIONS TO ADD A DEFINITION FOR AGRICULTURAL LIMITED USES; REPEALING ALL OTHER ORDINANCES IN CONFLICT HEREIN; AND PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

AMENDMENT TO
THE
UNIFIED LAND DEVELOPMENT CODE

WHEREAS, Section 163.3167(c), Florida Statutes, empowers the City to adopt land development regulations to guide the growth and development of the City; and

WHEREAS, the City Council of the City of Frostproof has determined it necessary and desirable to amend the regulations to allow for limited agricultural uses in the R-1a, R-1b, R-1c, and R-1d zoning districts; and

WHEREAS, pursuant to Section 166.041(c)2, Florida Statutes, the Planning and Zoning Commission and the City Council have held meetings and hearings to amend the Unified Land Development Code as presented in the attached exhibit, such exhibit attached as Exhibit "A" and made a part hereof; and, the meetings were advertised and held with due public notice, to obtain public comment; and having considered written and oral comments received during public hearings, find the changes necessary and appropriate to the needs of the City.

NOW, THEREFORE BE IT ENACTED BY THE PEOPLE OF THE CITY OF FROSTPROOF, FLORIDA that the Unified Land Development Code of the City of Frostproof is amended as set forth in Exhibit "A".

(a) **Severability**: If any provision or portion of this Ordinance is declared by any court of competent jurisdiction to be void, unconstitutional, or unenforceable, then all remaining provisions and portions of this Ordinance shall remain in full force and effect.

(b) **Codification**: This Ordinance shall be codified in the Code of Ordinances of the City of Frostproof, Florida.

(c) **Effective Date**: This Ordinance shall be effective 10 days after passage upon Second Reading.
INTRODUCED AND PASSED on First Reading this 21st day of February, 2011.

Mayor Kay S. Hutzelman

ATTEST:

Sarah Adelt, City Clerk

Approved as to form and correctness

Brian W. Haas, City Attorney

PASSED AND DULY ADOPTED ON SECOND READING, with a quorum present and voting by the City Council of the City of Frostproof, Florida meeting in Regular Session this 18th day of April, 2011.

Mayor Kay S. Hutzelman

ATTEST:

Sarah Adelt, City Clerk
EXHIBIT "A"

AMENDMENT TO
THE UNIFIED LAND DEVELOPMENT CODE

ARTICLE 4, SECTIONS 4.06.02.01, 4.06.02.02, AND 4.06.02.03;
ARTICLE 4, SECTION 4.10.00 – TABLE 4.10.01
AND
ARTICLE 2, DEFINITIONS
TO ADD A DEFINITION FOR AGRICULTURAL LIMITED USES
RELATING TO LIMITED AGRICULTURAL USES IN THE
R-1A, R1-B, R-1C, AND R-1D
ZONING DISTRICTS
Text that is underlined is text to be added and text that is shown as strikeout is to be removed.

**Article 2, Section 2.02.00 List of Definitions.**

**Limited Agricultural Uses**

**AGRICULTURAL LIMITED USES:** Land uses in residential areas that are characterized as agricultural in nature and limited to orchards; vineyards; nurseries; ornamental horticulture areas; groves; noncommercial greenhouses; and livestock (with the exception of pigs) raised for 4-H and FFA (Future Farmers of America) projects.

**AGRICULTURAL TAX EXEMPT USES:** Agricultural uses that have been previously qualified for the agricultural tax exemption as defined by Section 193.461, F.S., "which includes, but is not limited to, horticulture, floriculture, viticulture, forestry, dairy, livestock, poultry, bee, pisciculture (breeding, hatching, and rearing of fish), when the land is used principally for the production of tropical fish, aquaculture, sod farming, and all forms of farm products and farm production."

**AGRICULTURE:** The use of land for the purpose of growing crops, plants, trees, or other agricultural or forestry products, and other agricultural activities including, aquaculture, horticulture, floriculture, viticulture, forestry, dairy, livestock, poultry, bees, and any and all forms of farm products and farm production. For the purposes of marketing and promotional activities, seafood shall also be included in this definition. (Section 570.02, F.S.).

**AGRICULTURE/TRANSITIONAL:** A Future Land Use category allowing a mixture of uses including agriculture; residences; civic or public uses, such as parks; small-scale commercial development, to support the daily/convenience needs of the nearby residents; and churches, upon Conditional Use approval. Impacts within agricultural/transitional areas, to existing roadways, are minimal. Commercial development is designed to conform to the rural nature of the area, consistent with existing rural development patterns, and to be as unobtrusive as possible, and sensitive to environmental constraints. The use of lighting, if any, is designed to limit any impacts. The purpose and intent of agricultural/transitional areas is to provide a transition between urban and agricultural and conservation designated lands, to preserve existing natural resources, including habitat for listed species, and to retain the rural nature and pastoral appearance and function of the area.
Article 4, Section 4.06.02. Residential Districts.

Section 4.06.02.01. R-1a, Single-Family Estate and R-1b Single Family, Low Density, Residential Districts.

The purpose of these districts is to provide areas for low density, single-family, detached units with the necessary and incidental accessory uses that are normally located with the principal use. Clubhouses and similar facilities are permitted on parcels retained by the developer or dedicated to and maintained by a homeowners association. The density permitted in these districts ranges from 0-4 units per gross acre (R-1b) to 2-4 dwelling units per gross acre (R-1a). Limited agricultural uses (see Article 2 definition for Agricultural Limited Uses) are allowed so long as there are no infrastructure improvements installed for approved development and no primary residential use has been established. Livestock, with the exception of pigs, raised for 4-H and FFA projects, are permitted on a temporary basis for single family dwellings only.

Section 4.06.02.02. R-1c, Single-Family, Medium Density Residential District.

The purpose of this district is to provide areas for medium density single-family detached and two-family residential development with the necessary and incidental accessory uses that are normally located with the principal use. Clubhouses and similar facilities are permitted on parcels retained by the developer or dedicated to and maintained by a homeowners association. The density permitted in the R-1c district is 4-10 dwelling units per gross acre. Limited agricultural uses (see Article 2 definition for Agricultural Limited Uses) are allowed so long as there are no infrastructure improvements installed for approved development and no primary residential use has been established. Livestock, with the exception of pigs, raised for 4-H and FFA projects, are permitted on a temporary basis for single family dwellings only.

Section 4.06.02.03. R-1d, Mixed Residential, High Density Residential District.

The purpose of this district is to provide areas for high density residential development, which allows single-family and attached types of units, including duplexes and triplexes, and the necessary and incidental accessory uses that are normally located with the principal use. Clubhouses and similar facilities are permitted on parcels retained by the developer or dedicated to and maintained by a homeowners association. The density permitted in the R-1d district is 10-14 dwelling units per gross acre. Limited agricultural uses (see Article 2 definition for Agricultural Limited Uses) are allowed so long as there are no infrastructure improvements installed for approved development and no primary residential use has been established. Livestock, with the exception of pigs, raised for 4-H and FFA projects, are permitted on a temporary basis for single family dwellings only.
Section 4.10.00. Zoning Districts and Allowed Land Uses.

Land uses allowed within each zoning district are provided in Table 4.10.01.

A. Permitted Uses.

Permitted uses are designated by the letter "P". Permitted land uses within a PUD or Overlay District are subject to approval by the City Council.

B. Conditional Uses.

Uses that require Conditional Use approval are designated by a "C". A Conditional Use would not be appropriate generally throughout the zoning district or without restriction, but which, if controlled as to number, area, location, and relation to the neighborhood, would promote the public health, safety, welfare, order, comfort, convenience, appearance, or prosperity, and is permissible. Article 11 provides the process to review Conditional Use requests. Conditional Uses require Planning and Zoning Commission review with final approval by the City Council.

1. A Conditional Use Approval runs with the use of the property. Ownership may change, but so long as the character and conditions of the Conditional Use approval do not change, the Conditional Use approval remains in effect.

2. Should the use change to a use permitted in the zoning district that is not the use approved as the Conditional Use Approval, and remains so for six (6) months or more, a new application will be required to reestablish any Conditional Use.

3. The expansion or reconfiguration of any use or development that is subject to Conditional Use Approval shall require a new or amended Conditional Use prior to the issuance of a building permit.

C. Mining Activities.

Mining activities are prohibited within the City of Frostproof.
## Appendix G: Land Development Code - City of Frostproof

### Table 1-10.01

<table>
<thead>
<tr>
<th>Land Use</th>
<th>AG</th>
<th>R-1</th>
<th>R-2</th>
<th>R-3</th>
<th>R-4</th>
<th>R-5</th>
<th>R-6</th>
<th>R-7</th>
<th>R-8</th>
<th>RR-1</th>
<th>RR-2</th>
<th>RR-3</th>
<th>RR-4</th>
<th>RR-5</th>
<th>RR-6</th>
<th>RR-7</th>
<th>RR-8</th>
<th>R-9</th>
<th>RR-10</th>
<th>SEC</th>
<th>REC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>County</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The table includes various land use categories and their respective permitted uses, including agricultural, farm housing, and manufactured housing, among others. The codes P, C, and REC indicate permitted, conditional, and recommended uses, respectively.*
Appendix H: Case Law

In the Supreme Court of Florida
Case No. 92.803
Fifth District Court of Appeal
Case No: 96-01973

Ronald Schultz
Citrus County Property Appraiser
Petitioner

vs
Sugarmill Woods, Inc
Respondent

Feb. 6, 1998
Rehearing Denied March 18, 1998.

Taxpayers appealed property appraiser’s denial of agricultural classification for property for ad valorem tax purposes. The Circuit Court, Citrus County, Patricia Thomas, upheld the appraiser’s determinations. Taxpayers appealed. The District Court of Appeal, W. Sharp, J., held that: (1) taxpayers were not entitled to agricultural Classification for natural woodlands; (2) property used for cattle grazing could not be denied agricultural classification based on county zoning code; (3) property was entitled to agricultural classification based on tenant’s cattle grazing operation; and (4) agricultural classification could not be denied solely because recorded plat purported to dedicated public streets and park areas.

Furthermore:

Property used for cattle grazing could not be denied agricultural classification for ad valorem tax purposes based on county zoning code under which cattle grazing was not permitted use or legal non conforming use for property, which was zoned planned development/residential; comprehensive development plans intended to regulate and control development were intended to have no impact on agricultural classifications. West’s F.S.A. SS 163.3164 (4), 163.3194 (5), 193.461(3)(b), 380.04.
Florida Supreme Court (1999)

The District Court of appeal held that:

The District Court of Appeal, 706 So.2d 887, W. Sharp, J., ruled that zoned use of land is not, as a matter of law, determinative of actual, good faith use of land for tax purposes. On petition for review, the Supreme Court held that zoning alone is not determinative as a matter of law.

Furthermore:

The court also stressed that “the key to determining entitlement to (an) agricultural classification is the actual physical activity being conducted on the land.

District Court of Appeal of Florida, Second District.

The Glades, Inc., a Florida corporation' Connie Hubschman and Samuel Hubschman, trustees

Appellants,

v.

Sam J. Colding as property appraiser for Collier County, and Guy Carlton, as tax collector ofr Collier County, Appellees.

No. 82-332.

Where area was continuously used in good faith for agricultural purposes since its reacquisition in 1979, agricultural tax classification could not be denied on ground that a road and cul-de-sac led into the property as part of platted subdivision and that high purchase price reflected that of developed land. West's F.S.A. SS 193.161(3)(a,b).

Once the court finds a bona fide good-faith agricultural use, prior or future use of the land is irrelevant for agricultural tax classification West's F.S.A SS 193.461(3)(a,b)

The District Court of appeal held that:
Agricultural tax classification could not be denied on ground that a road and cul-de-sac led into the property as part of platted subdivision and that high purchase price reflected that of developed land. West's F.S.A SS 193.461(3)(a,b)
Furthermore:
Once the court finds a bona fide good-faith agricultural use, prior or future use of the land is irrelevant for agricultural tax classification. West's F.S.A. SS 193.461(3)(a,b).

Supreme Court of Florida.

James L. Roden, etc., et al., Petitioners,
V
K&K Land management, Inc., a corporation, Respondent
No. 51954

The Supreme Court held that:

On writ of certiorari, the Supreme Court, Boyd, J., held that: (1) it had jurisdiction of petition for writ of certiorari; (2) “agricultural use” is test for classification of land as agricultural land entitled to preferential tax treatment, and (3) presumption of non-agricultural use was rebutted with respect to 325 acres, of 350-acre tract sold for six times its agricultural assessment, which were continued for citrus production, while remaining 25 acres were developed in an amusement park.

In addition:

stated, at 370: “‘use’ is still the guidepost in classifying land, although other specifically enumerated factors relative to use may also be considered. Agricultural use is now and has always been the test.”

Furthermore:
Sale of land for a purchase price three or more times greater than its agricultural assessment creates a presumption that the land is not used for good faith agricultural purposes. Section 193.461(3), Florida Statutes. The presumption may be overcome "(u)pon a showing of special circumstances by the landowner demonstrating that the land is to be continued in bona fide agriculture.” In this case the District Court upheld the trial court’s determination that there existed special circumstances sufficient to rebut the presumption.

The court also stated the following:
As the Department of Revenue has done before, it stresses that commercial success is a necessary circumstance for rebuttal. We reject this notion. As we stated in Straughn v.K &K Land Management 326 So.2d 421 (Fla. 1976), “special circumstances” may be drawn from the factors for consideration in the classification process listed in Section 193.461(3)(b). The presence of all or any one factor in particular is not necessary for the presumption’s rebuttal.
District Court of Appeal of Florida,  
Second District.

Kenneth M. Wilkinson, Lee County Property Appraiser, and William Fussell,  
Lee County Tax Collector, Appellants,  
V.  
Larry Kirby, Trustee, Appelee  
Nos. 94-00064,94-00067 and 94-03139.

Property taxpayer was entitled to agricultural classification for land which was purchased for development but was used exclusively as a tree farm. West’s F.S.A. S 193.461(3)(b) 1-6

Property taxpayer overcame presumption that land which sold for a price which was three or more times the amount of the agricultural assessment was not being used for agricultural purposes by showing that development project for which land was purchased failed and that owner placed land to legitimately

The District Court of appeal held that:

Property taxpayer was entitled to agricultural classification for land which was purchased for development but which was used exclusively as a tree farm. West’s F.S.A. S 193.461(3)(b) 1-6

Furthermore:

Property taxpayer overcame presumption that land which sold for a price which was three or more times the amount of the agricultural assessment was not being used for agricultural purposes by showing that development project for which land was purchased failed and that owner placed land to legitimate agricultural use. West’s F.S.A. S 193.461 (3) (c)