

UF/IFAS Farm Pocket Notebook

for records and in-field reference

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(edited in 1989 by Larry Halsey and Steve Ford)
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Solutions for Your Life

As the Web site for University of Florida Extension, SFYL brings you current, science-based answers, with all our expertise in one place to make it easy for you to get information you need. Explore topics in lawn and garden care, family life and consumer choices, agriculture, community development, the environment, and youth development.

<http://solutionsforyourlife.ufl.edu>

This Farm Pocket Notebook contains record forms and information. The purpose of the notebook is to provide ready reference information and a production recordkeeping format where the information is most often needed, and most accurately recalled – in the field. It is designed to travel with you in a shirt pocket. The best way to make use of it, then, is to keep it with you and record crop and livestock information as it develops.

This revision expands the scope of the original notebook, making it more suitable for farms throughout Florida. It increases the focus on implementation and recordkeeping of Best Management Practices (BMPs), especially Integrated Pest Management (IPM) practices. It is intended for use by smaller- to medium-sized farms producing row crops, vegetables and livestock.

Why Keep Farm Records?

A good recordkeeping system is vital to the farm business. Both production and financial records should be kept to provide information used in management decisions. A good system is needed to:

- help identify successful - and unsuccessful - production practices.
- aid in identifying chronic problems in individual crop and livestock enterprises, such as weed problems or poor calving history.
- help make year-to-year management decisions such as crop rotations based on soil-borne disease or herbicide carryover.
- document practices which have certification or legal requirements of recordkeeping such as pesticide application, Worker Protection Standard compliance, Best Management Practice implementation and meeting Organic production standards.
- maintain timely, progressive information such as pest population levels that may trigger Integrated Pest Management practices.
- document productivity when transferring or selling farm assets.
- document compliance with requirements of government programs.
- document yield levels for disaster assistance or insurance claims.

This notebook is not a ledger for financial recordkeeping. Records of expenditures and income, depreciation, debt, inventories and other financial data should be maintained for tax reporting, loan repayment, and other farm business management decisions. The physical production records kept here, together with prices paid or received, will allow you to build enterprise accounts – budgets – that are essential for good economic decisions. Financial records are needed to:

- help determine which enterprises are profitable or sustainable.
- provide information for cash flows, marketing plans, budgets for planning purposes and preparing accurate tax returns.
- track whole-farm profitably and financial position.
- provide information required by lenders when applying for credit.

Usual Florida Planting and Harvesting Seasons

Agronomic Crops	J	F	M	A	M	J	J	A	S	O	N	D
Corn (grain) plant												
harvest												
Corn (silage) plant												
harvest												
Cotton planting												
harvesting												
Peanuts plant												
harvest												
Soybeans plant												
harvest												
Tobacco plant												
harvest												
Wheat plant												
harvest												
Hay (perennial)												
harvest												
Vegetables	J	F	M	A	M	J	J	A	S	O	N	D
Snap/Pole Beans plant												
harvest												
Cabbage plant												
harvest												
Cantaloupe plant												
harvest												
Sweet Corn plant												
harvest												
Cucumbers plant												
harvest												
Eggplant plant												
harvest												
Lettuce plant												
harvest												
Peppers plant												
harvest												
Potatoes plant												
harvest												
Squash plant												
harvest												
Strawberries plant												
harvest												
Tomatoes plant												
harvest												
Watermelon plant												
harvest												

KEY Usual Planting	begin =	heavy =	end =
Usual Harvest			

Abbreviations Used throughout the Notebook

acre	A, ac	hour	hr	ounce	oz
bushel	bu	hundredweight	cwt	parts/million	ppm
centimeter	cm	inch (")	in	per	/
cubic (cu)	X ³	kilograms	kg	percent	%
feet/second	ft/sec	kilometer	km	pint	pt
fluid ounce	fl oz	liter	l	pound	lb
foot (')	ft	liquid	liq	quart	qt
gallon	gal	meter	m	square (sq)	X ²
gallons/acre	gpa	mile	mi	tablespoon	Tbsp
gallons/minute	gpm	miles/hour	mph	teaspoon	tsp
grams	g	milliliter	ml	ton (metric)	T
hectare	ha	millimeter	mm	yard	yd

Field Record Address _____

Field Name _____ Location Lat _____ Long _____

Date from: _____ to: _____ Acres _____ Leased? Y N

Planting - Mulched? Y N Type:			
Crop	Variety	Date	Transplant / Seeding Rate

Soil Test Results			
P ppm	VL L M H VH	pH	Other
K ppm	VL L M H VH	Lime Recommended Tons/A	

Lime & Fertilizer / Manure / Compost / Other Nutrient Sources			
Analysis	Rate/A Applied	Notes – total applied	Date

Labor and Equipment				
Task	Hours		Date	Notes
	labor	equip		

Petiole Sap Test Results					
Date & Notes	NO ₃ N	K	Date & Notes	NO ₃ N	K

Date Other BMPs Implemented	

Irrigation Applied (see rainfall records)			
Date	Duration, Amount, Injected	Date	Duration, Amount, Injected

Pest Monitoring — Scouting Report level: 1=light, 2=medium, 3=high					
Date	Pests Observed	Level	Date	Pests Observed	Level

Pest Management / Pesticides Applied					
Date Time	Product Name Formulation	AI Reg #	Application Method/Equip	Rate/A Total Applied	REI (hrs)

Harvested			End-of-Season Weed Inventory
Date	Yield	Labor Hours	

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CEU Attendance for Pesticide Applicator License Renewal
 License # _____ Expiration Date: _____

Class, Location & Number	Date	Core	Category

You must keep Continuing Education Unit attendance forms to submit with your application for renewal

Pesticide CEUs Available on the Internet

onlinepesticideceus.com provides quality CEU training to applicators and handlers. Sometimes, it is inconvenient to attend live CEU meetings. Online training is an option for applicators to receive quality education in the convenience of their own home.

Benefits of Integrated Pest Management (IPM)

- Prevents rather than reacts to pests
- Detects pests early, before they damage plants
- Integrates the best methods for controlling pests
- Avoids unnecessary use of chemicals
- Minimizes pest resistance to pesticides
- Provides long-term, economical pest management

Pesticide Container Disposal

It is a violation of Florida law "to dispose of, discard or store any pesticides or pesticide containers in such a manner as to cause injury to humans, vegetation, crops, livestock, wildlife, or pollinating insects or to pollute any water supply or waterway." Specific disposal instructions for unused pesticides and triple rinsed or pressure rinsed pesticide containers are on each pesticide label.

Worker Protection Standard - WPS

WPS information, including requirements for restricted entry interval (REI), posting and personal protection equipment, is listed on pesticide labels in the section marked *Agricultural Use Requirements*. Farm workers and handlers must be trained and a record of training must be maintained. Contact your Extension Agent for a copy of EPA's "How to Comply" manual and guidance in providing training for your employees. Maintain a training record on the following page.

KEEP ALL PESTICIDES OUT OF THE REACH OF CHILDREN

The pesticide label is a legal document: it is a violation of federal and state law to use any pesticide inconsistent or not in accordance with the label or labeling materials.

Support for publishing this Notebook is provided by

Florida Farm Bureau Federation
<http://www.floridafarmbureau.org>

Worker Protection Standard – Worker & Handler Training

Instructor Training: Location _____ Instructor Trained By: _____ Date _____

Date	Worker/Handler, ID # Type*	Instructor	Signature**	Materials Used

*use Worker (W), Handler (H). **Signature indicates. †I certify that I received training and information required by WPS. ‡Worker's. Handlers must be trained every five years. †Training must occur before a worker enters a field under WPS.

Amortization

Annual Payments to Amortize a Loan of \$1,000

Yrs	3%	4%	5%	6%	8%	10%	12%	14%
2	523	530	538	545	561	576	592	607
3	354	360	367	374	388	402	416	431
4	269	275	282	289	302	315	329	343
5	218	225	231	237	250	264	277	291
6	185	191	197	203	216	230	243	257
8	142	149	155	161	174	187	201	216
10	117	123	130	136	149	163	177	192
12	100	107	113	119	133	147	161	177
15	84	90	96	103	117	131	147	163
20	67	74	80	87	102	117	134	151
25	57	64	71	78	94	110	127	145
30	51	58	65	73	89	106	124	143

payments rounded to whole dollars

Monthly Payments to Amortize a Loan of \$1,000

Yrs	3%	4%	5%	6%	8%	10%	12%	14%
2	43	43	44	44	45	46	47	48
3	29	30	30	30	31	32	33	34
4	22	23	23	23	24	25	26	27
5	18	18	19	19	20	21	22	23
6	15	16	16	17	18	19	20	21
8	12	12	13	13	14	15	16	17
10	10	10	11	11	12	13	14	16
12	8	9	9	10	11	12	13	14
15	7	7	8	8	10	11	12	13
20	6	6	7	7	8	10	11	12
25	5	5	6	6	8	9	11	12
30	4	5	5	6	7	9	10	12

payments rounded to whole dollars

Amortization Formulas

Annual Payments

$$\$_{\text{annual}} = [i / (1 - [1 / (1 + i)^n])] \times A$$

Periodic Payments (use $p=12$ for monthly payments)

$$\$_{\text{periodic}} = [(i / p) / (1 - [1 / (1 + i / p)]^{[n \times p]})] \times A$$

$\$$ = periodic payment

A = amount financed i = interest rate (in decimals)

n = number of years p = number of payments per year

most spreadsheets use \wedge (uppercase 6) to raise to an exponent

Farm Machinery Management and Costs

Fuel cost per acre (\$/A) = hours/acre X gallons/hour X \$/gallon

Hours per acre (hr/A) = 8.25 ÷ (speed (mph) X implement width (ft) X fuel efficiency)

Acres per hour (A/hr) = (speed (mph) X implement width (ft) X fuel efficiency) ÷ 8.25

Speed (mph) = 225 ÷ (seconds to travel 330')

Fuel efficiency = time an implement is actually performing effective work ÷ time it is in the field (expressed as a decimal)

Fuel Efficiency (f.e.) for Types of Implements

Operation	Typical f.e.	Operating Speed
Tillage (disk, plow, cultivate)	.60	3 – 6 mph
Mowers, rakes, conditioners	.75	4 – 6 mph
Planters, drills	.70	3 – 6 mph
Harvest (combine, forage chop, bale)	.65	1½ - 4 mph
Sprayers	.60	3 – 6 mph

Fuel Consumption per Hour

Gas .065 gal x maximum rated pto hp

Diesel .048 gal x maximum rated pto hp

LP gas .080 gal x maximum rated pto hp

$$\text{Feet / second (ft/sec)} = \text{mph X } 22 \div 15$$

Fuel Consumption for Max Rated Drawbar Horsepower (db hp) gal/hr

Type	30 db hp	60 db hp	90 db hp	120 db hp	150 db hp
For tractors doing rated work					
Diesel	2.3 gph	4.6 gph	6.9 gph	9.2 gph	11.5 gph
Gasoline	3.2 gph	6.3 gph	-	-	-
LP gas	4.7 gph	9.2 gph	-	-	-
For tractors doing average work					
Diesel	1.5 gph	3.1 gph	4.8 gph	6.2 gph	7.5 gph
Gasoline	2.4 gph	4.7 gph	-	-	-
LP gas	3.5 gph	6.9 gph	-	-	-

Equivalent Travel Rates

Feet per Minute	Miles per Hour (mph)						
	1 mph	1.5 mph	2 mph	3 mph	4 mph	5 mph	6 mph
	88'	123'	176'	264'	352'	440'	528'

Fixed (Ownership) and Variable (Operating) Costs for Farm Machinery

- **Fixed Costs** include depreciation, taxes, housing, interest and insurance. Use 16% of original purchase price as an estimate of annual fixed costs.
- **Variable Costs** include fuel and lubricants, maintenance and labor (operator) wage. Use consumption rates above to estimate fuel costs; lubricants typically cost about 15% of fuel cost. Maintenance costs are often estimated at about 5% per year of the initial purchase cost over the lifespan of the tractor. Wheel tractors have an expected mechanical life of about 12,000 hours.

Reduce Tractor Costs:

- Much of the work performed by a tractor is "light-load work". It is estimated that up to 20% of the tractor's annual fuel bill could be saved by shifting up and reducing engine speed when doing light work.

Tractor Safety: Tractors Are the #1 Cause of Farm Fatalities

- Make sure the gear shift is in neutral before cranking.
- Securely fasten seat belt, if the tractor has a ROPS.
- Do not permit riders.
- Avoid operating near ditches, embankments, holes.
- Stay off steep slopes; cross slowly, back up slope, drive forward downhill.
- Stop power take-off before dismounting; don't dismount when pto is in motion.
- Never refuel tractor while engine is running or extremely hot.
- Hitch only to the drawbar and hitch points recommended by manufacturer.
- When tractor is stopped, set brakes securely and use park lock.



Area & Perimeter

A = Area of a shape or polygon

P = Perimeter

L = length **w** = width

h = height **b** = base

C = Circumference

d = diameter **r** = radius

π is pi, 3.1416

Square

A = L x L **or** **A** = L²

P = L + L + L + L

or P = 4L



Rectangle

A = L x w

P = L + L + w + w

or P = 2(L + w)



Parallelogram

A = L x h

P = L + L + w + w

or P = 2(L + w)



Trapezoid

A = [(L₁ + L₂) / 2] x w

P = L₁ + L₂ + 2w



Triangle

A = ½ b x h

or A = (b x h) / 2

P = a + b + c



Circle

A = r² x π **or** **A** = r² x 3.1416

C = 2r x π **or** **C** = d x 3.1416



If dimensions of a shape are measured in feet, calculate acres by dividing the area (square feet – sq ft or ft²) by 43,560 (ft²/A).

Dimensions of a Square or Circle — Acres

Square	Acres	Circle
length of side		diameter, radius
L = 209'	1 A	d = 236' r = 118'
L = 295'	2 A	d = 333' r = 167'
L = 466'	5 A	d = 527' r = 264'
L = 660'	10 A	d = 745' r = 373'
L = 933'	20 A	d = 1053' r = 527'

To find the length of **c**, the hypotenuse or the longest side of a right triangle, use **c**² = (a² + b²); length is the square root of c².



How to lay out a right angle for field or fence corners: A triangle with sides that are multiples of 3, 4 and 5 will always have right angle where the sides measuring multiples of 3 and 4 meet.

Equivalents & Conversions

Weight

1 oz = 28.4 g

16 oz = 1 lb

2000 lb = 1 ton

20 cwt = 1 ton

1 lb = 0.45 kg

1 kg = 1000 g = 1,000,000 mg

1 kg = 2.2 lb

1000 kg = 1 metric ton = 2204 lb

1 gal = 8.345 lb (water)

Length

1 in = 2.54 cm

12 in = 1 ft = 30.48 cm

36 in = 3 ft = 1 yd

1 yd = 0.9144 m

1 m = 39.37 in = 1.094 yd

1 mi = 5280 ft = 1760 yd = 1.609 km

1 km = 1000 m = 0.6217 mi

¼ mi = 1320 feet

1 rod = 16.5 ft = 5.5 yd

1 vara = 33.3 in = 0.93 yd = 0.85 m

Area - Square Measure

1 sq ft (ft²) = 144 sq in (in²)

1 yd² = 9 ft² = 0.836 m²

1 A = 43,560 ft²

1 A = 160 rod²

1 A = 0.42 ha

1 ha = 10,000 m² = 2.47 A

1 *manzana* = 10,000 *varas*² = 1.77 A

1 sq mi (1 section) = 640 A

1 sq mi = 259 ha

Volumes - Cubic Measure

1 oz = 30 ml

1 pt = 16 oz

1 qt = 32 oz = 2 pt

1 cm³ = 1 ml

1 l = 1000 ml (or cm³) = 1.06 qt

1 qt = 0.946 l

1 gal = 4 qt = 8 pt = 128 oz

1 gal (liquid) = 231 in³ = 3.785 l

1 gal (dry) = 268 in³

1 ft³ = 728 in³ = 7.48 gal (liquid)

1 ft³ = 28.3 l

1 bu = 1.24 ft³ = 35.2 l

1 yd³ = 27 ft³ = 21.7 bu = 765 l

1 ac in of water = 27154 gal = 3630 ft³

1 cord (wood) = 128 ft³ (4' x 4' x 8')

Equivalents & Conversion Rates

Dilution Liquid Measure

per 100 gallons	per gallon
1/4 pt	1/4 tsp
1 pt	1 tsp
1 qt	2 tsp
1 gal	2.5 Tbsp (1 fl oz)
2 gal	5 Tbsp (2.5 fl oz)
4 gal	1/3 pt (5 fl oz)
10 gal	3/4 pt (13 fl oz)

Dilution Dry Measure

per 100 gallons	per gallon
1/2 lb	1/12 oz
1 lb	1/6 oz
2 lb	1/3 oz
3 lb	1/2 oz
5 lb	3/4 oz

Temperature Conversions

°F (Fahrenheit) = (°C x 1.8) + 32

°C (Celsius) = (°F - 32) x 0.56

°C	temperature	°F
-40	(same)	-40
0	water freezes	32
16	(reciprocal)	61
20-25	room temp	68-77
37	human body	99
100	water boils	212

Inches in Row	Thousands of Plants at Row Widths of:							Plants / 100'	
	8"	12"	18"	24"	28"	32"	36"		40"
1"	784	523	349	261	224	196	174	157	1200
2"	392	261	174	131	112	98	88	79	600
4"	196	131	88	66	56	49	44	40	300
6"	131	88	59	44	38	33	29	27	200
8"	98	66	44	33	28	25	22	20	150
10"	79	53	35	27	23	20	18	16	120
12"	66	44	30	22	19	17	15	14	100
18"	44	29	20	15	12	11	10	9	67
24"	33	22	15	11	10	9	8	7	50

(rounded up to the nearest 1000)

Average Person's Reaction Time

tractor speed	stopping distance	distance traveled
2 mph	6 ft	1.5 ft
5 mph	12 ft	3.7 ft
10 mph	30 ft	7.3 ft
15 mph	44 ft	11.0 ft
20 mph	64 ft	14.3 ft

Rates

1 oz/ft³ = 2773 lb/A

1 oz/yd³ = 303 lb/A

1 oz/100 ft³ = 27 lb/A

1 lb/100 ft³ = 436 lb/A

1 pt/1000 ft³ = 5.4 gpa

2.3 gal/1000 ft³ = 100 gpa

1 qt/100 ft³ = 100 gpm

1 ac in/hr = 450 gpm

1 ppm = 0.013 fl oz/100 gal (water)

1 ppm = 1 ml/l

1 % solution = 1.33 fl oz/gal

1 ft³/sec = about 450 gal/min

1 ft³/sec = 1 ac in/hr

1 ft/sec (fps) = 1.47 mph

1 fps = 22/15 mph

55 mph = 88 km/h

100 lb/A = 2.5 lb/1000 ft²

Equivalents

1 bu (ear corn) = 2.5 ft³

1 bu (shelled corn) = 1.2 ft³

1 ton (corn, sorghum, rye) = 35.7 bu

1 ton (wheat, soybeans) = 33.3 bu

1 cup dry fertilizer -- about ½ lb

1 qt dry fertilizer -- about 1½ lb

1 qt dolomite -- just over ½ lb

Harvest Losses

1 ear corn per 1/1000 A = 1 bu/A

20 kernels corn per 10 ft² = 1 bu/A

40 soybeans / 10 ft² = 1 bu/A

10 peanuts / 10 ft² = 140-150 lb/A

¾ oz cotton per 1/100 A = 5 lb/A

100 Bedding Plants

spaced at:	will cover:
4" x 4"	11 sq ft (ft ²)
6" x 6"	25 sq ft (ft ²)
8" x 8"	44 sq ft (ft ²)
10" x 10"	70 sq ft (ft ²)
12" x 12"	100 sq ft (ft ²)
15" x 15"	156 sq ft (ft ²)

Forages for Livestock and Wildlife

Crop - common name (legume inoculant group ¹)	lb/ bu	1,000 Seed/lb	Broadcast ² lb/A	Depth, inches	Target pH
Alfalfa - Al	60	225	12-20	¼ - ½	7.0
Alyceclover - Cp	60	300	12-15	¼ - ½	6.0
Bahiagrass	45	210	15-20	¼ - ½	5-5.5
Beggerweed – Florida - Cp	60	200	8-10	¼ - ½	6.0
Bermudagrass –seeded	40	1800	8-10	0 - ½	5.5
Clover – arrowleaf - Cl	60	400	8-10	0 - ½	6.5
Clover – berseem - Cl	60	200	16-20	¼ - ½	6.2
Clover – crimson - Cl	60	150	20-26	¼ - ½	6.5
Clover – red - Cl	60	270	12-15	¼ - ½	6.5
Clover – subterranean - Cl	60	54	18-22	¼ - ½	6.2
Clover – white - Cl	60	770	3-4	0 - ¼	6.5
Cowpea (Iron & Clay) - Cp	60	4	100-120	1-3	6.0
Crabgrass	25	825	3 - 10	¼ - ½	6.0
Desmodium – carpon - Cp	--	350	5-10	¼ - ½	6.0
Fescue - tall	20	225	16-20	¼ - ½	6.0
Guineagrass	--	750	4-6	¼ - ½	6.0
Indigo, hairy - Cp	--	200	6-8	¼ - ½	6.0
Lespedeza – Kobe - Cp	30	200	12-15	¼ - ½	6.2
Lespedeza – sericea - Cp	35	360	12-15	¼ - ½	6.2
Lupine – blue - Lu	60	2.5	60-80	½ - 1	6.5
Lupine – yellow - Lu	--	3.5	40-60	½ - 1	6.5
Millet – Browntop	56	110	20-25	½ - 1	6.0
Millet – Japanese	35	140	20-25	½ - 1	6.0
Millet – Pearl	50	85	20-25	½ - 1	6.0
Oats (grazed)	32	18	3-4 bu	¾-1½	6.0
Pea – Austrian winter - Vp	60	4	45-60	½ - 1	6.2
Pigeon Pea - Cp	--	6	20-25	1 - 2	6.0
Rye (grazed)	56	18	1½ -2 bu	1 - 2	6.0
Ryegrass - Italian	24	227	20-30	0 - ½	6.0
Savana Stylo -Cp	--	200	10-20	¾ - ½	6.0
Sorghum x Sudan	40	16	24-30	1 -¾	6.0
Sweetclover - Al	60	250	12-15	¼ - ½	6.5
Triticale (grazed)	48	14	1½ -2 bu	1 - 2	6.0
Vetch – common - Vp	60	10	40-50	½ - 1	6.2
Vetch – hairy - Vp	60	18	20-30	½ - 1	6.2

Vegetative Establishment

Forage Grasses – Bermudagrass, Digitgrass, Limpgrass, (Hemarthria), Stargrass - Plant 15-30 bu/A of live sprigs (rhizomes or sod crowns) immediately following digging, Jan 15-Mar 15 or Jun 1-Aug 15 with adequate soil moisture. Sprig 2"-3" deep with commercial sprigger or broadcast over surface, disk leaving tips above soil surface. Cultipack or roll immediately. OR plant ½ - 1 ton of green tops broadcast, disked and packed.

Perennial Peanut – Plant 80+ bu/A, fresh underground stems (rhizomes) immediately after digging, Jan 15-Mar 15 or Jun 1-Aug 15 with adequate soil moisture. On well prepared seedbed, sprig 2"-3" deep with commercial sprigger. Cultipack or roll immediately. Irrigate to ensure successful establishment.

¹ Inoculant groups: Cp=cowpea, Al=alfalfa, Cl=clover, Lu=lupine, Vp=vetch/pea
² Seeding rate per acre reduced if drilled

Agronomic Crops

Crop - common name (legume inoculant group ¹)	lb/ bu	1,000 Seed/lb	Seeding Rate lb/A	Depth, inches	Target pH
Corn (18-32,000 seed/A)	56	1.5	4-10	1½ - 2	6.0
Cotton	30	4	6-9	¼ - ¾	6.5
Oats (grain)	32	18	2-3 bu	¾ - 1½	6.0
Peanut-Spanish/runner - Cp	43	0.65	60-100	1½ - 2½	6.0
Peanut-Virginia - Cp	43	0.55	90-135	1½ - 3	6.0
Rye (grain)	56	18	1-1½ bu	1 - 2	6.0
Sorghum (grain)	56	15	6-8	1 - 1¼	6.0
Soybean - Sb	60	3	40-65	1¼ - 2	6.0
Sunflower	25	5	6-8	1½ - 2	6.0
Wheat (grain)	60	18	1-1½ bu	1 - 2	6.0

Vegetative Establishment

Sugarcane – Plant Sep-Jan, 3-4 tons/A, with seed cane cut into short billets (about 2'), overlapped 50% in furrows 6"-8" deep in 5' rows. Cover, roll or cultipack.

Tobacco - Transplant from seedbed, Mar 10-Apr 10 in rows 42"-48" apart. Space plants 16"-24" in row.

¹ Inoculant groups: Cp=cowpea, Sb=soybean

Agencies to Assist You in Implementing BMPs

In addition to your County Extension Agent, you may find assistance in implementing BMPs from your local USDA Natural Resources Conservation Service office. The Florid Department of Agriculture and Consumer Services, Office of Agricultural Water Policy is a non-regulatory agency with technical specialists located at Water Management Districts to assist in assuring water quality. Contact them at:

North West Florida WMD Marianna, 850-482-9915

Suwannee River WMD Live Oak, 1-800-226-1066

St. Johns River WMD Palatka, 386-329-4812

South West Florida WMD Sarasota, 941-377-3722 & Tampa, 1-800-836-0797

South Florida WMD West Palm Beach, 561-686-8800

Rainfall Normals²: Monthly Totals for Florida Sites, inches

Site	J	F	M	A	M	J	J	A	S	O	N	D	Total
Milton	5.3	4.9	6.2	4.8	4.2	7.4	7.9	6.6	6.0	3.7	4.6	4.9	66.5
Marianna	4.2	4.4	5.5	5.0	4.0	5.1	7.4	6.4	4.8	2.3	3.2	4.3	56.6
Tallahassee	4.4	4.8	5.8	3.6	4.3	7.1	8.4	7.2	5.6	3.2	3.4	4.2	62.0
Lake City	3.7	3.7	4.5	3.1	3.5	6.6	7.3	7.1	5.5	2.9	2.2	3.0	53.1
Jacksonville	3.0	3.5	3.7	2.8	3.3	6.1	6.5	7.1	8.0	3.9	2.0	2.6	52.4
Gainesville	2.8	3.0	3.6	3.1	3.4	6.8	7.4	7.3	5.2	3.3	1.8	2.9	50.5
Tampa	2.1	3.0	3.1	2.0	2.6	6.6	7.5	7.9	6.4	2.4	1.6	2.2	47.5
Lake Alfred	2.4	2.7	3.6	2.6	4.2	7.6	7.5	7.4	6.7	3.0	1.9	2.1	51.5
Orlando	2.0	3.3	3.5	2.6	3.1	6.7	8.1	7.2	6.8	3.9	1.7	2.1	50.9
Arcadia	2.0	2.5	2.8	2.4	3.7	8.8	8.1	7.5	7.7	3.3	1.8	1.8	52.6
Immokalee	2.2	2.3	2.8	2.3	4.0	8.2	7.1	7.8	6.4	2.7	2.2	1.7	49.8
W Palm Bch	3.0	2.6	3.4	3.4	5.2	8.1	5.8	6.9	9.1	6.6	4.2	2.9	61.1
Miami	1.9	2.1	2.5	3.1	6.0	9.3	6.1	8.0	9.1	7.1	3.0	2.0	60.1

² Normalization period varies; refer to the NOAA Southeast Regional Climate Center http://www.sercc.com/climateinfo/historical/historical_fl.html

Vegetable	Harvest		Mgt	Labor	Unit	Yield/A	
	Season	Days to 1 st				Typical	Excellent
Beans, snap	warm	50-60	M	M	30 # Bu	100-150	200-300
Beans, pole	warm & hot	60-70	M	H	28-30 # Bu	300	350
Beans, lima	warm & hot	65-75	L	M	28-32 # Bu	150-200	250
Broccoli	cool	65-90	M	M	21 # carton	250-400	400-500
Cabbage	cool	75-90	M	L	50 # crate	450-600	700-900
Cantaloupe/Muskmelon	warm	70-85	M	H	1,000 lb	20-30	40-60
Cauliflower	cool	55-65	M	M	30 # carton	250-450	500-900
Chinese Cabbage	cool	50-65	M	M	45-50 # crate	400-600	700-900
Cucumbers	warm	40-60	M	H	55 # Bu	150-300	350-700
Greens-collard, mustard, turnip	cool	40-60	M	M	doz bunches	300-400	400-600
Eggplant	warm & hot	85-100	M-H	M	33 # Bu	600-800	1200-1800
Escarole	cool	80-100	M-H	M	28-30 # Bu	500-600	700-900
Lettuce	cool	50-90*	M-H	M	43-50 # Bu	500-600	800-900
Malanga	warm & hot	10-12 mo	M	M	50 # box	150-200	300-400
Okra	warm & hot	50-60	M	H	30 # Bu	200-400	400-600
Onions, bulb (transplant, Nov)	April-May	150-180	H	H	50 # bag	300-600	800-1200
Onions, green bunching	cool	50-100	M	H	4 doz/carton	900	1200
Peas, English & snow	cool-early warm	50-80	M	H	30 # Bu	50-100	125-150
Peas, southern	warm & hot	55-70	L	M	24 # Bu	100-140	200-300
Peppers, bell	warm	70-85	M-H	M	25-28 # Bu	500-900	1100-1500
Potato, white (mech harvest)	early warm	80-95	M	M	cwt	200-225	250-300
Potato, sweet	warm & hot	120-140	M	L	50 # Bu	400-600	800
Potato, boniato	warm & hot	6-8 mo	M	L	50 # box	350-400	500-550
Spinach	cool	40-45	L	H	cwt	30-40	50-60
Squash, yellow	warm	35-45	L-M	M	42 # Bu	300-400	600-800
Squash, zucchini	warm	35-45	M	M	42.44 # Bu	400-800	900-1000
Squash, acorn	warm	95-105	M	L	41-45 # Bu	250-400	450-600
Strawberry	cool/early warm	50-70	H	H	flats	1400-1500	1600-1800
Sweet corn	warm	65-85	M	M	4 ½ -5 doz /box	150-250	300
Tomato, stalked	warm	75-90	H	H	25 # box	600-1000	1500-2000
Watermelon (standard)	warm & hot	80-90	M	L	1,000 lb	30-40	50-70

Rainfall and Irrigation Record

Day	J	F	M	A	M	J	J	A	S	O	N	D
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30		-										
31	-			-		-			-		-	
Total												

record daily total rainfall or applied irrigation; circle days with damaging weather and note damage or loss on field records

Sprayer Calibration

Calibration is determining the **amount of spray applied** to a unit of area, usually in gallons per acre. It is determined by 1) nozzle opening or orifice size, 2) pressure, 3) ground speed and 4) nozzle spacing.

Proper calibration is necessary for efficient use of expensive agricultural chemicals and for protection of the environment. Always calibrate pesticide spray equipment using clean water. Never calibrate after pesticides have been mixed. Always calibrate under the same conditions you will face when actually spraying. Check that equipment, pumps and hoses are in proper working order, and check for uniformity of nozzles output along the boom and correct nozzle pattern.

A simple calibration technique is the *1/128th of an acre method* - there are 128 ounces per gallon. Volume in **ounces** sprayed from a nozzle over an area of 1/128 acre equals the application rate in **gallons per acre**.

These steps let you calibrate for broadcast application:

1. Measure and mark a course 1/128th of an acre. For a broadcast boom with nozzles spaced on 20" centers, the table below shows a course length of 204'. Place marks at the start and finish, 204' apart. The course should be the same conditions as the field to be sprayed.
2. Drive through the course at the same speed and gears you will drive when spraying. Time it twice – down and back – and use the average of the two.
3. Record the time it takes to drive the measured course.
4. Park the tractor and operate the sprayer at the same pressure and RPMs as will be used in the field. Turn on the sprayer, and let the air bleed until flow is constant. Choose the nozzle that delivers an amount closest to the average amount determined during the nozzle uniformity check. Collect the flow from one nozzle for the time you recorded.
5. Flow collected in **ounces** equals the **gallons per acre** for a broadcast application.

Refer to the UF/IFAS **edis** document <http://edis.ifas.ufl.edu/pdf/FILES/AE/AE1020> for a fuller explanation, and adjusted calculations for band application. Other guides for pesticide equipment and application are found at the **edis** publication collection.

Row or Nozzle Spacing	Length in feet to equal				Feet to equal 1/100 A		
	1 acre	1/100 acre	1/128 acre	1/1000 acre	2 rows	4 rows	6 rows
10"	52,272	523	408	52.3	261	131	87
12"	43,560	436	340	43.6	218	109	73
15"	34,848	348	272	34.8	174	87	58
18"	29,040	290	227	29.0	145	73	48
20"	26,136	261	204	26.1	131	65	44
24"	21,780	218	170	21.8	109	54	36
28"	18,669	187	146	18.7	93	47	31
30"	17,424	174	136	17.4	87	44	29
32"	16,335	163	128	16.3	82	41	27
36"	14,520	145	113	14.5	73	36	24
40"	13,068	131	102	13.1	65	33	22
48"	10,890	109	85	10.9	54	27	18
60"	8,712	87	68	8.7	44	22	15
72"	7,260	73	57	7.3	36	18	12

When nozzles, pressure, speed or application conditions change, recalibrate.

Be a Good Neighbor – discuss your plans to apply pesticides with your neighbors to make certain their property and health are not jeopardized by your application.

Calibration and Sprayer Nozzle Considerations

Output of a nozzle tip depends upon the size and shape of the tip opening (the orifice) and the pressure of the fluid forced through it. Application rate - gallons per acre - depends upon the output, the speed at which the tip moves across the field, and the width of the strip covered by the tip's spray pattern.

Acres Sprayed per Tankful

Tank Capacity	Application Rate – Gallons per Acre (gpa)						
	5	10	15	20	25	30	40
25 gallons	5	3.5	1.7	1.2	1	0.8	0.6
50 gallons	10	5	3.3	2.5	2	1.7	1.3
100 gallons	20	10	7.5	5	4	3.3	2.5
200 gallons	40	20	13.3	10	8	6.7	5
250 gallons	50	25	16.7	12.5	10	8.3	6.2
350 gallons	70	35	23.3	17.5	14	11.7	8.8
500 gallons	100	50	33.3	25	20	16.7	12.5

Recommendations for spray nozzle tips:

- Solvents (gas, oil, diesel, grease) soften plastic tips; handling may damage them.
- Use a different rated flow tip to make large changes in field application rate.
- Use nozzle strainers and tank/line filters to minimize tip clogging.
- Maintain 25% pattern overlap on flat fans for broadcast applications.
- Reduce drift: use wider angle tips closer to the ground, use lower application pressure, and by use drift-reduction tips.

Spray Nozzles

Nozzle Pattern	Typical Nozzle spacing	Typical Nozzle pressure	Most Common Application
Flat Fan	20 in	30 – 60 psi	broadcast: herbicides, insecticides, fungicides, fertilizers
Ext Range Flat Fan	20 in	15 – 60 psi	broadcast: herbicides, insecticides, fungicides, fertilizers
Even Fan	Varies	20 – 40 psi	band: herbicides, insecticides, fungicides, fertilizers
Flood	40 in	10 – 25 psi	broadcast: fertilizers, defoliants
Solid Cone	40 in	15 – 40 psi	soil incorporation of herbicides
Disc-Core Cone	Varies	40 – 400 psi	high pressure application: fungicides to tree fruit & vegetables; application of insecticides at 150 psi or lower

Before You Calibrate

- Make certain your equipment is clean; rinse water goes in the tank.
- Check hoses, pumps, PTO fittings, strainers, filters for soundness and good repair.
- Set the regulator pressure for the job to be done and for drift control.
- Select nozzles for the job and to control spray volume and drift.
- Clean screens, nozzles and strainer with a soft-bristle brush, don't use your mouth!

When You Calibrate

- Use clean water; **never** calibrate with pesticide mix in the tank!
- Use appropriate Personal Protection Equipment, especially hands and eyes.
- Check for nozzle flow pattern; replace if there is a bad pattern.
- Check for nozzle flow uniformity; replace if there is more than a 10% variation.
- Calibrate under the same field conditions as you will be operating during spraying.

While You Apply

- Monitor flow to make certain your calibration was accurate.
- Make adjustments in ground speed to "fine tune" the application rate: *faster for lower application rate - slower for greater application.*
- Whenever conditions change, recalibrate.

Plant Diagnosis, Analysis and Identification Services of UF/IFAS
<http://solutionsforyourlife.ufl.edu>

Proper collection, handling and shipping of samples for identification, analysis or diagnosis are critical. Your Extension agent will assist you, and refer you to specific **edis** publications.

Diagnostic and Identification Clinics

- **Insect Identification:** Agents will provide ID kits for submitting samples to the Insect ID Lab (fee, \$8). Refer to Fact Sheet **RFSR010, Insect Identification Service**.
- **Diseases:** The main Plant Disease Clinic in Gainesville and regional clinics at Research and Education Centers in Quincy, Immokalee and Homestead constitute the Disease Clinic Network (typical fee of \$20, may vary). Refer to Fact Sheet **RFSR007, Florida Extension Plant Disease Network**.
- **Nematodes:** Number and type of plant-parasitic nematodes in soil and plant samples are reported (fee, \$20 for Florida, \$25 for others). Refer to Fact Sheet **ENY-027, Nematode Assay Laboratory**.
- **Plant Identification:** Botanist and taxonomists at the Florida Museum of Natural History Herbarium identify plants, including weeds. See Fact Sheet **RFSR013, Plant Identification and Information Service**.

Extension Soil Testing Laboratory: ESTL analyzes soil, animal waste and water, with varying fees for different tests. The routine soil fertility test reports pH, lime requirement and extractable P, K, Ca, and Mg with fertilizer and lime requirements recommendations for most crops (fee, \$7). Other tests include micronutrients, electrical conductivity (soluble salts), organic matter, and some tissue analyses. Water is tested for chemical and mineral aspects only. Forms for the various tests including sampling technique and handling instructions are found at <http://soilslab.ifas.ufl.edu>. Contact your County Health Department for biological and potability tests.

Extension Offices: Agents and staff provide sampling materials (vials, bags, forms, mailing cartons and labels, etc.) and "How-To" guidance in collecting samples. Some offices have plant clinics and soil test labs. In addition, Agents may assist in interpreting results and providing information to help you make pest, nutrient, and other management decisions for your farm, ranch, dairy, nursery, grove or natural area.

Distance Diagnostic and Identification System: DDIS allows some diagnoses and pest identification using digital photography and an Internet connection to UF/IFAS specialists. Contact your agent for instructions for submitting samples or digital images. Click on Training Materials at <http://ddis.ifas.ufl.edu> for some tips on taking effective photos for submission to DDIS.

If you map fertility, pests or other sample results using GIS, include latitude/longitude or point data names with the samples so you can associate the results in your system when they return.

Integrated Pest Management Information

Integrated Pest Management (IPM) is a sustainable approach to managing pests through biological, cultural, physical and chemical tools in ways that minimize risks to the environment and to human health. IPM Florida – <http://ipm.ifas.ufl.edu>

Pest Scouting

Follow these steps for scouting your field for insects, using the sample schemes below. Note weeds, disease and nematode symptoms, and other problems.

- **Scout fields regularly.** Scout every 3 to 7 days, according to the crop. It may require daily field checks. Scout throughout the season, up to harvest.
- **Sample fields carefully.** Be sure your sampling is unbiased. Do not sample borders, fence rows or other unusual areas. Make certain your sample represents the entire field. Don't enter the field at the same point every time. Sample in the shape of an M or a Z.
- **Note any problems and keep records.** Record pest levels using the Field Records in this notebook, or using a Scouting Record that you find useful.

Sampling for Pests in Florida Crops

Crop/Sampling Unit	Samples Per Acre(s)	Minimum # Samples Per Field	Minimum # Field Locations	Days Between Samples
Corn (grain)				
5 consecutive plants	1 per 2 Ac	20	5	7
Cotton				
Plant (terminals)	2 per Ac	50	20	3-4
Whole Plant (after9-1)	1 per Ac	25	25	3-4
1/3 grown squares	-	100	100	3-4
Grain Sorghum				
Whorl (before bloom)	2 per Ac	100	10	7
Uniform (during bloom)	2.5-3 per Ac	50	10	2-3
Head (after bloom)	2.5-3 per Ac	50	10	7
Peanuts				
3 row feet-shake cloth	1 per 2-3 Ac	5	5	7
9" dig at base of plant	1	15	15	7
Soybeans				
3 row feet	1 per 5 Ac	4	4	5-7
Pasture & Hay Fields				
1square foot (1'x1')	1 per 4 Ac	10	10	7
Sugarcane				
5 stalks each from 5 stools	1 per 40 Ac	100	4	14-21
Strawberries				
Uniform areas – same variety, plant date, etc		25 leaflets or 10 flowers	25	7
Tomato, Peppers, Snap Beans: refer to comprehensive guides				

Five Steps of IPM

- **Scout:** Consistently inspect and monitor for pests and their natural enemies.
- **Identify:** Accurately identify the pests and their natural enemies, and understand their behaviors.
- **Set Action Thresholds:** Determine the level of damage that can be tolerated before action is warranted.
- **Apply IPM Methods:** Use a multi-tactic approach that integrates four methods of pest management (cultural, physical, biological & chemical control).
- **Evaluate the IPM Program:** Use pest ID and scouting data, review management methods and their effectiveness, determine which are effective and economical.

Treatment Thresholds for Insect and Disease Pests

Crop / Pest	Action Threshold – When to Treat
Corn	
Stink bug	Early silk through milk stage, 1 stink bug per 5 plants. End of milk through the hard dough stages, 1 stink bug per plant. Only stink bugs ¼ inch or longer should be considered.
Cotton	
Fall armyworm	15-20 small larvae per 100 plants
Beet armyworm	3 or more active hits per 100 feet of row
Budworm/Bollworm	<u>Conventional cotton cultivars</u> : in fields previously untreated for bollworm, 30% eggs or 20% small larvae. In previously treated fields, 25%-30% eggs or small larvae. <u>Bt transgenic cultivars</u> : 8-9 larvae > ¼ inch per 100 plants When > 50% of plants are infested with live aphids.
Cotton aphid	When > 50% of plants are infested with live aphids.
Plant bugs	6-7 per 100 sweeps
Stink bug	When there is 1 stink bug per 6 feet of row (drop cloth) or 15%-20% boll damage
Spider mites	When there are >9 mites per leaf. Spot treat infestation
Thrips	2 thrips per plant up to 5-leaf stage
Whiteflies	When > 50% of terminals are infested with adults.
Grain Sorghum	
Corn earworm, fall armyworm	Before heading, when 5% or more of the plants have fall armyworm egg–masses or newly hatched larvae. Treatment may be justified when 50% or more of the plants have live worms present in whorls. After heading, when there are 1-2 or more worms per head
Sorghum Midge	From early bloom stage to late milk stage, when there are 1 or more adult midges per 2 heads
Sorghum webworm	When there are 3-5 or more worms per head
Peanuts	
Beet armyworm, corn earworm, fall armyworm	Before the plants have met in the middles, when there are 3-4 worms per foot of row. If the plants have met in middles, when there are 4-5 worms per foot of row. After the plants have completely covered the middles, when there are 5-6 or more worms per foot of row.
Cutworms	When there is 20% or more defoliation due to cutworms and cutworms are present.
Lesser corn-stalk borer, Southern corn rootworm	Before pegging, when 10% or more of plants are infested with borers or rootworms. After pegging, if 15% or more of the plants are infested.
Spider mites	When leaf discoloration due to mite feeding is evident and mites are present.
Soybeans	
All foliage feeders	<i>Soybean defoliation should not be permitted to exceed 30% anytime during plant development.</i> See inside back cover
Beet armyworm	When there are 10 or more worms per foot of row. (Treat when worms are less than ½ of an inch)
Corn earworm, fall armyworm	Before bloom, when there are 4 or more large (greater than ½ of an inch) worms per foot of row. After bloom, when there are 1 or more large worms per foot of row.
Soybean looper	When there are 4 or more loopers per foot of row. (Treat when worms are less than ½ inch)
Three cornered alfalfa hopper	When 15% of the plants less than 12" tall show stem damage and there is an active population of nymphs.

Stink bug	After pods have set up to mid-podfill, when there is one stink bug nymph (greater than ¼ of an inch diameter) or 1 adult per 3 feet of row. After mid-podfill, when there is 1 large nymph or adult per 1 foot of row. If soybeans are being grown for seed, treat when the population exceeds 1 large nymph or adult per 6 feet of row anytime after pods have set.
Velvetbean caterpillar	Before bloom, when there are 10 or more worms per foot of row. After bloom, when there are 4 or more large (greater than ½ of an inch) worms per foot of row.
Asian soybean rust	At growth stage flowering to pod fill with cool temperatures, if rust has been identified in the region fields or sentinel plots, consider a fungicide application.
Sugarcane	
Sugarcane borer	2-3 live larvae per 100 sampled stalks
Strawberries	
Mites	Apply miticide when 2 to 5% of the leaflets infested with one or more spider mites
Thrips	Sample at least ten newly-opened flowers per homogeneous area. Apply a thrips insecticide if there is an average of 5 or more thrips (adults or nymphs) per flower.
Worms	Spray any uniform areas where 1 or more plants have an active worm infestation.
Pasture / Hay	
Fall armyworm	When there are 2-3 larvae per square foot
Grass loopers	When there are 2-3 larvae per square foot
Mole crickets	If noticeable stand loss is evident
Spittlebugs	In-season treatment is seldom justified. Problem fields may benefit from burning the field in late February/early March.

For most crop, ornamental, forest and livestock enterprises in Florida, find a fact sheet in **edis** titled "Insect Management in..." with complete scouting, sampling and threshold information, pest descriptions and controls:

http://edis.ifas.ufl.edu/TOPIC_GUIDE_Insect_Management_Guide

Specific, detailed and comprehensive IPM/Scouting Guides are available: Growers IPM Guide for Florida Tomato and Pepper Production
http://ipm.ifas.ufl.edu/resources/success_stories/T&PGuide/index.shtml

Integrated Pest Management for Florida Snap Beans

<http://edis.ifas.ufl.edu/pdffiles/PP/PP11700.pdf>

Commercial Ornamental Nursery Scouting Manual

<http://mrec.ifas.ufl.edu/Iso/SCOUT/INTRO.htm>

Water Quality - Point Source Contamination Prevention

- Don't mix chemicals within 200 feet of wells, ditches, streams or other water source
- Prevent back-siphoning: use check valves and an air gap between fill hose and chemical tanks or nurse tanks
- Store pesticides and fertilizers in a secure location away from water sources
- Triple rinse or pressure wash pesticide containers, and put rinsate in the spray tank
- Identify vulnerable sites, especially sinkholes, and avoid pesticide or fertilizer application near them or their watershed

Florida Right-to-Farm Act

The Florida Right-to-Farm Act restricts nuisance suits against farmers. The statute explicitly states that if a farm was not a nuisance when it was established, it will not be considered a public or private nuisance after it has been in operation for one year. The statute also will protect the new owner if you sell your farm. Farming activities are protected under the statute if you change the type of use on your farm, you change the intensity of use or the use of the surrounding land changes.

However, you are not protected by the statute if you increase the noise, odor, dust, or fumes by expanding your farm operation. This statute does not allow you to violate the principles of negligence or nuisance. Contaminating water wells or misapplying pesticides will still leave you open to a potential lawsuit. The statute specifically mentions conditions that will be evidence of a nuisance. The statute does not protect unsanitary conditions or health hazards.

from *Handbook of Florida Water Regulation: Florida Right-to-Farm Act*
<http://edis.ifas.ufl.edu/FE599>

Florida Fence Law

Owners of adjoining land are under no legal responsibility to fence their land. However, an owner who does decide to fence his land has no legal claim of contribution by the adjoining landowner unless there is an agreement to contribute or the adjoining landowner notifies the owner that he will pay his proportionate share. In the case where two adjoining landowners purchase land in which a fence already exists, the adjoining landowners are considered joint owners of the fence and have a joint obligation to repair and maintain the fence.

Florida law does not impose on the owners of livestock the duty to fence, but owners may be civilly or criminally liable for animals that stray onto public roads. Owners who intentionally, knowingly, or negligently permit their animals or livestock to run at large or stray upon public roads are liable for any resulting injuries or property damage and may even be guilty of a second-degree misdemeanor; criminal penalties may include imprisonment not exceeding 60 days and/or a fine up to \$500. Similar criminal penalties may apply to the owner of livestock carrying contagious diseases who knowingly allows his livestock to run at large or come into contact with other animals.

from *Handbook of Florida Fence and Property Law*
<http://edis.ifas.ufl.edu/FE106>

Agricultural Classification for Property Assessment

Agricultural classification (often called "Ag Exemption" or "Greenbelt" classification) is the designation of land by the property appraiser, pursuant to F.S. 193.461, in which the assessment is based on agricultural use value. To qualify, a return must be filed with the property appraiser between Jan. 1 and Mar. 1. Only lands used for bona fide agricultural purposes shall be classified agricultural. "Bona fide agricultural purposes" means good faith commercial agricultural use of the land. The property appraiser may require the taxpayer to furnish information to establish such lands are actually used for a bona fide agricultural purpose.

The property appraiser may deny agricultural classification to the following:

- lands which are not being used for or diverted from agricultural use
- land that has been zoned non-agricultural at the request of the owner
- land on which a sub-division plat is recorded
- land which is purchased for a price three or more times the agricultural appraisal placed on the land.

from *Florida Association of Property Appraisers*

Pesticide Laws and Rules

Read and follow instructions on the label. It is a violation of federal and state law to use any pesticide inconsistent with the label or labeling materials. In Florida, pesticide laws and rules are administered by Florida Department of Agriculture and Consumer Services, Division of Environmental Services. Refer to Florida Statutes Chapter 487 and Florida Administrative Code Chapters 5E-2 and 5E-9, or check with your Extension agent. <http://www.flaes.org/index.html>

Average Nutrient Content of Common Animal Manures Used in Organic Production (lb/ton, wet weight basis)

Manures		N	P ₂ O ₅	K ₂ O	Other Nutrients
lb/ton wet basis					
Dairy	Fresh	10	5	8	4% Ca, 2% Mg, 1% S
	Paved surface	10	6	9	5% Ca, 2% Mg, 2% S
	Liquid	23	14	21	10% Ca, 5% Mg, 3% S
Beef	Fresh	12	7	9	5% Ca, 2% Mg, 2% S
Broiler	House litter	72	78	46	41% Ca, 8% Mg, 15% S
	Stockpiled litter	36	80	34	54% Ca, 8% Mg, 12% S
Horse	Fresh	12	6	12	11% Ca, 2% Mg, 2% S
Layers	Fresh	26	22	11	41% Ca, 4% Mg, 4% S
	Undercage	28	31	20	43% Ca, 6% Mg, 7% S
	Deep pit	38	56	30	86% Ca, 8% Mg, 9% S
	Liquid	62	59	37	35% Ca, 7% Mg, 8% S
Turkey	Fresh	27	25	12	27% Ca, 2% Mg
	House litter	52	64	37	35% Ca, 6% Mg, 9% S
	Stockpiled litter	36	72	33	42% Ca, 7% Mg, 10% S

*scraped surface 1lb/1,000 lbs liquid

Adapted from Soil Facts: Nutrient Content of Fertilizer and Organic Materials, NCSU Coop Extension #AG-439-18 (1997) and Alternative Soil Amendments, NCAT/ATTRA # IP054 (2001).

Fertilizer Necessary to Provide 1 lb of N (Nitrogen)

Urea (46-0-0)	2 1/2 lb
Ammonium Nitrate (34-0-0)	3 lb
Ammonium Sulfate (20-0-0)	5 lb
20-0-20 or 20-5-10	5 lb
16-4-8 or 16-34-0	6 1/2 lb
Sodium Nitrate (16-0-0)	6 1/2 lb
15-0-14	6 lb
13-6-6 or 13-13-13	7 b lb
Bone Meal (12% N)	8 a lb
10-10-10	10 lb
9-18-27	11 lb
8-8-8	12 1/2 lb
Cottonseed Meal (7%N)	14 a lb
6-6-6 or 6-12-8	16 b lb
5-10-15	20 lb
Fish Emulsion (4% N)	25 lb
(about 10 lb/gallon or about 2 1/2 gal for 1 lb N)	
Worm Castings (1.4% N)	71 lb
Fresh Dairy Manure (wet basis, 10 lb/Ton)	200 lb

**Average Nutrient Content of Meals and Compost Materials
Used in Organic Production (percent, dry-weight basis)**

Meals, Composts	percent (%)			Comments
	N	P ₂ O ₅	K ₂ O	
Alfalfa Meal	2.5	0.5	2	Used as animal feed
Blood Meal	12-15	2	0.8	High in ammonia, can burn; expensive
Bone Meal, Raw	4	21	0.2	22% Ca, 0.3% Mg
Citrus Pomace	1	0.1	1	Heavy and wet; best composted prior to use
Cottonseed Meal	7	3	1.5	Certifiers may prohibit due to pesticide residues
Crab Meal	2-10	0.2-3.5	0.2	Slow release; used for nematode suppression
Egg Shells	1.2	0.4	0.2	
Feather Meal	15	0	0	
Fish Meal	10-13	4	0	Available in wettable powder; a source of sulfur.
Fish Emulsion	4	1-4	1	Acid & enzyme digest, 4-1-1
Kelp Meal	1	0.5	2-10	Provides many elements; may have high salt
Mushroom Compost	2	0.7	1.5	(Spent)
Oak Leaves	0.8	0.4	0.2	Readily available
		often contaminated with trash; may acidify soil		
Oyster Shell Siftings	0.4	10.4	0.1	
Peanut Hull Meal	1.2	0.5	0.8	
Peanut Meal	7.0	1.5	1.2	
Pine Needles	0.5	0.1	0	
Sawdust	0.2	0	0.2	
Seaweed, Dried	0.7	0.8	5.0	
Shrimp Heads	7.8	4.2	0	
Shrimp Waste	2.9	10	0	
Soybean Meal	7	1.2	1.5	Protein supplement for animals; can be expensive.
Spanish Moss	0.6	0.1	0.6	
Worm Castings	1.5	2.5	1.3	Contains beneficial organisms

Adapted Soil Facts: Nutrient Content of Fertilizer and Organic Materials, NCSU Coop Extension # AG-439-18 (1997) Alternative Soil Amendments, NCAT/ATTRA # IP054 (2001).

Organic Certification Checklist

A farm plan required by most certifying organizations typically includes:

- Accurate map of the farm
- A description of record keeping protocols (include this notebook)
- A nutrient and soil management plan
- A pest management plan
- Field histories: production methods, crop, cover crop, inputs, production area
- Inputs: composition, source, rate, application method, location, date
- Seed/transplant s: source, lot N°, rate, application method, location, date
- OMRI (Organic Materials Review Institute) certification or labels from inputs
- Irrigation method and schedule
- Tillage methods and equipment used
- Monitoring and scouting practices
- Sanitation methods and checklists
- Changes in farm plans without prior approval from farmer's certification agency may result in loss of certification

**Average Nutrient Content- Mined or Natural Amendments Used in
Organic Production (percent, dry-weight basis)**

Minerals	percent (%)			Comment
	N	P ₂ O ₅	K ₂ O	
Nitrogen Materials				
Sodium Nitrate	16	0	0	Maximum allowable use is 20% of total N/crop
Phosphorous Materials				
Colloidal Phosphate	0	16	0	Availability moderately faster than phosphate rock
Phosphate Rock	0	2-35	0	Slow availability
Granite – Ground.	0	0	4.5	Mostly feldspar; slow availability
Greensand	0	1.5	5-7	Soil conditioner, rich in iron, magnesium, silica and trace minerals; slow availability; expensive. (Glauconite)
Potassium Materials				
Potassium Chloride	0	0	60-62	(Muriate of Potash)
Potassium Magnesium Sulfate	0	0	22	11% Mg, 23% S (Sulfate of potash magnesia or Langbeinite)
Potassium Sulfate	0	0	50	18% S
Calcium Materials				
Calcitic Limestone	0	0	0.3	32% Ca, 3% Mg.
Dolomitic Limestone	0	0	0	21-30% Ca, 6-12% Mg
Gypsum	0	0	0.5	22% Ca, 17% S
Magnesium Materials				
Magnesium Sulfate	0	0	0	10% Ca, 14% S (Epsom Salt)
Magnesium Sulfate	0	0	0	17% Ca, 23% S (Kieserite)
Boron Materials				
Solubor	0	0	0	20.5% B

Adapted from Knott's Handbook for Vegetable Growers 4th Ed (1997) and Soil Facts: Nutrient Content of Fertilizer and Organic Materials, NCSU Coop Extension # AG-439-18 (1997).

Grass Tetany in Cattle

Grass tetany or grass staggers is a cattle disorder caused by a magnesium (Mg) deficiency. In Florida, grass tetany is more severe when cattle graze young forage, particularly the first flush of growth during December and January. Grass tetany occurs most frequently on pastures grown on soils low in available magnesium (Mg). One practice to help avoid grass tetany is to lime with dolomitic limestone, which includes magnesium, when low soil pH dictates liming. If pH is adequate but magnesium soil test is low, consider including sulfate of potash magnesia, or magnesium oxide (MgO) can be included with fertilizer materials.

from <http://edis.ifas.ufl.edu/DS137> and <http://edis.ifas.ufl.edu/ds162>

Sulfur

Many of the fertilizers that are used today are high analysis materials that contain little or no sulfur. Most agronomic crops require 15-20 lbs/A of sulfur for best yields. At least this amount of sulfur should be applied with nitrogen or as potassium sulfate, sulfate of potash magnesia or other sulfur-containing fertilizer. Growers may use nitrogen materials that contain 3-5% sulfur when applying split applications and when sidedressing.

from UF/IFAS Agronomy Dept. - Agronomy Notes, April, 2008

Alternative Pest Control Products

Ingredient	Function /Advantages	Disadvantages	Comments
INSECTS			
<i>Beauveria bassiana</i>	Fungus that targets leaf feeding insects	Multiple applications	Most effective on early stages
<i>Bacillus thuringiensis</i> (Bt)	Soft-bodied insect larvae must ingest product. Can apply same day as harvest.	Degrades quickly in sun, washes away with rain.	Match the pest to the specific liquid or dust formulation.
Spinosad*	This soil fungus product kills insects after ingestion.	Degrades quickly in sun, washes away with rain.	Formulations for garden vegetables and fire ants.
Pyrethrum	Made from extracts of chrysanthemum flowers.	Broad spectrum insecticide. Harmful to beneficials.	Liquid and dust formulations.
Rotenone	Works as a contact and stomach poison, not toxic to honeybees.	Broad spectrum insecticide, so harmful to beneficials.	Sometimes mixed with Pyrethrum.
Horticultural Oil	Works on mites, aphids, scales, insect eggs and soft adults.	Coverage under leaves is critical. Degrades quickly.	May injure sensitive plants.
Insecticidal Soap	Soft-bodied pests, ie aphids, mites, whiteflies, thrips, caterpillars, and mealybugs	Less effective on heavier cuticles such as beetles and grasshoppers.	Only active when wet and may burn sensitive plants.
Neem oil	Kills aphids, whiteflies, thrips, leafminers,	Harmful to beneficials.	Active ingredient in horticultural soaps. Works better in warm temperatures. Has disease control uses.
Neem oil soap	caterpillars, scales, beetles, mealybugs and other insects.	Apply frequently on immature insects when population density is low.	
Azadirachtin			
Diatomaceous earth (DE) (silicon dioxide)	From diatom fossils. Deters slugs, beetles and many structural pests. Dehydrates the insects.	Possible effects on beneficials. Nuisance value of the dust and does not adhere well to the foliage.	To minimize destroying beneficials, should be applied late evening or at night.
Boric acid	Similar to DE. Acts as a stomach poison; causes insects to die from starvation.	Has to be consumed by the insect and is sometimes mixed with a sweetener.	Available in paste, powder, aerosol, tablet and liquid forms.

Compost and Manure

- IFAS estimates that about 50% of total nitrogen from composts and manures will be available during the season it was applied.
- Submit compost and manure samples to a licensed lab for analysis. IFAS ESTL performs analyses. See page 34.
- Repeated applications of poultry litter can lead to excess soil accumulation of phosphorus, calcium, zinc and copper.
- Apply, incorporate immature compost and raw manure during dry periods.
- Mature compost is cool, odorless and has no visible particles.
- Organic standards require that raw manure and immature compost be applied 90 days in advance of edible portion that does not touch soil, and 120 days in advance of edible portion that does touch soil.

Alternative Pest Control Products, continued

Ingredient	Function /Advantages	Disadvantages	Comments
DISEASES			
<i>Bacillus subtilis</i>	Soil bacteria used to manage <i>Sclerotinia fruticola</i> , <i>Verticillium</i> , <i>Rhizoctonia</i> and <i>Fusarium</i> .	Degrades quickly in sun, washes away with rain.	Use proper strain: Foliage: QST713; Soil: GB03, MBI600, FZB24; Seed: GB03, MBI 600.
Copper (Cu)	Copper is effective on many foliar diseases.	Accumulates in the soil. May be phytotoxic at higher rates	Must be used in a manner that minimizes accumulation of copper in the soil.
Baking soda (Potassium bicarbonate)	Non-toxic, very inexpensive. Controls powdery mildew and early blight on tomato.	Apply weekly with detergent to control powdery mildew.	High levels of sodium bicarbonate will burn plants.
Sulfur (S)	Prevents fungal blights, spots, downy and powdery mildew, leaf blister, anthracnose, scab, stem canker, <i>Septoria spp.</i> and <i>Stemphylium spp.</i> leaf molds.	Sulfur is toxic to mammals. Do not apply when air temperatures exceed 80 °F or when oil has been recently applied.	May burn plants. Sold as sulfur, lime-sulfur, and Bordeaux mixture.
<i>Streptomyces gramicifaciens</i>	Contains active cultures of <i>Streptomyces</i> that grow around plant roots and prevent infection from other diseases, including <i>Fusarium</i> .	May cause sensitization by inhalation and skin contact. Wear all protective equipment including a dust mask.	Do not allow re-entry for 4 hours after applied.
WEEDS			
Corn gluten meal	A by-product of corn processing, this herbicide also has N. Some formulations have added K and P.	Is not effective on emerged or established weeds. Expensive.	Effective on some broadleaf annual weeds when applied prior to weed emergence in spring.

*Safer for Beneficial Insects

Compiled from The Resource Guide for Organic Insect and Disease Management (2006), NY Ag Extension, Cornell University and The Organic Gardener's Handbook of Natural Insect and Disease Control. (1996), Rodale Press

Food Safety for Fresh Vegetables and Fruit

- Wash your hands!
- Take a bathroom break when necessary (but not in the field).
- Wear gloves when touching produce.
- Triple-wash leafy vegetables.
- Be aware of microbial sources such as livestock manure.
- Avoid cross-contamination.
- Keep animals (including pets) away from vegetables - especially after the produce has been washed.

Refer to **edis** Food Safety index http://edis.ifas.ufl.edu/TOPIC_Food_Safety. Select "Commercial Food Safety" for HACCP (Hazard Analysis Critical Control Point) guidelines. Check with Family and Consumer Science Extension agent.

Approximate Gestation Periods					
Service Date	Mare (340)	Cow (285)	Ewe (148)	Doe (151)	Sow (114)
1-Jan	6-Dec	12-Oct	28-May	31-May	30-Mar
1-Feb	6-Jan	12-Nov	28-Jun	1-Jul	25-May
1-Mar	4-Feb	11-Dec	27-Jul	30-Jul	23-Jun
1-Apr	7-Mar	11-Jan	27-Aug	30-Aug	24-Jul
1-May	6-Apr	10-Feb	26-Sep	29-Sep	23-Aug
1-Jun	7-May	13-Mar	27-Oct	30-Oct	23-Sep
1-Jul	6-Jun	12-Apr	26-Nov	29-Nov	23-Oct
1-Aug	7-Jul	13-May	27-Dec	30-Dec	23-Nov
1-Sep	7-Aug	13-Jun	27-Jan	30-Jan	24-Dec
1-Oct	6-Sep	13-Jul	26-Feb	1-Mar	23-Jan
1-Nov	7-Oct	13-Aug	29-Mar	1-Apr	23-Feb
1-Dec	6-Nov	12-Sep	28-Apr	1-May	25-Mar

Horses: 340 days
(48 weeks, 4 days)

Cattle: 285 days
(40 weeks, 5 days)

Sheep: 148 days
(21 weeks, 1 day)

Goats: 151 days
(21 weeks, 4 days)

Swine: 114 days
(16 weeks, 2 days)

Normal Rectal Temperatures	°F	°C
Horse - Mare	100.0	37.8
Horse - Stallion	99.7	37.6
Cow - Beef	101.0	38.3
Cow - Dairy	101.5	38.6
Sheep	102.3	39.1
Goat	102.3	39.1
Pig	102.5	39.2

Forage Testing

Determining forage values and supplement requirements can only be done accurately if the forage composition is known. Excessive nitrate concentrations can cause reduced production or livestock death.

Contact your county extension agent to learn more about forage testing. A relatively small investment in testing can generate large savings in feed costs or prevent death loss.

Nitrate Toxicity in Forages (dry matter basis)

Level	% (DM)	ppm	Comments
Safe	< 0.25	< 2,500	Generally considered safe
Caution	0.25 – 0.50	2,500 – 5,000	Generally safe when fed with a balanced ration. For pregnant animals, limit to half of total dry ration.
Danger	0.50 – 1.50	5,000 – 15,000	Limit to no more than 25% of ration.
Toxic	> 1.50	> 15,000	Do not use in free-choice feeding programs.

from Forage Crop Pocket Guide, Potash & Phosphate Institute

Average Nutrient Content of Byproduct Feeds

Byproduct ¹	DM	TDN	CP	Ca	P
% (Dry Matter basis) %					
Brewers grains	92	64	26	0.33	0.55
Citrus pulp	91	82	6	1.50	0.11
Corn gluten feed	90	83	25	0.36	0.82
Corn gluten meal	91	84	46	0.16	0.51
Corn grain	88	90	10	0.02	0.35
Cotton gin trash	91	44	7	0.65	0.12
Cottonseed hulls	91	42	4	0.15	0.09
Cottonseed meal	92	75	49	0.20	1.10
Cottonseed	92	92	23	0.16	0.70
Distiller grains ²	94	86	23	0.11	0.43
Molasses (sugarcane) ³	75	72	5	1.00	0.11
Peanut hulls	91	22	7	0.26	0.07
Peanut skins	92	65	17	0.26	0.07
Feathermeal	93	70	91	0.28	0.72
Rice bran (with germ)	91	70	14	0.08	1.70
Soybean hulls	91	76	12	0.53	0.18
Soybean meal	90	87	49	0.29	0.71
Wheat middlings ⁴	89	69	18	0.17	1.00

¹ Values derived from multiple sources and vary depending on factors including year, season, processing, storage, handling, and contamination. Commodity feeds do not have guaranteed nutrient analyses. Storage and handling costs may offset savings from replacement of commercial feeds or supplement.

² Without solubles added.

³ Black strap, > 79° brix. Includes no additives.

⁴ Flour byproduct, < 9.5% fiber.

from <http://edis.ifas.ufl.edu/AN142>

Approximate Pounds Hay Required for Feeding Livestock

Type	lbs/animal/day
Cows, dry pregnant	15-20
Cows, with calves	25-28
Replacement heifers	10-12
Bred yearling heifers	18-23
Herd bulls	28-30
Stocker steers	10-14
Horse	24-30
Sheep	3-6
Goat	2-5

Total lbs/day X day fed X number of animals = total lbs needed
Total lbs needed ÷ 2000 = tons needed

from Forage Crop Pocket Guide, Potash & Phosphate Institute

Monthly Herd Inventory	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Open mature cows												
Bred mature cows												
Lactating cows-2 nd calf & older												
Lactating cows-1 st calf												
Calves												
Open replacement females												
Bred replacement females												
Weaned replacement females												
Mature Bulls												
Bulls, under 24 months												
Purchased												
Died												
Sold (\$)												
Notes, including sale or purchase prices, dates of palpation or weaning, etc.												

Register your "premise" (animal locations or management headquarters) with the Florida Department of Agriculture for all livestock under the National Animal Identification System.

Livestock Vaccination Record

Group or Individual	Date	Product	Lot or Serial #	Administration Route	Withdrawal or Revaccination Time

Pasture Grazing Record

Pasture ID (Field Record page)	Acres	Herd ID	# Head	Date In	Grass Height In	Date Out	Grass Height Out

(Include Field Record page in this Pocket Notebook in Pasture ID column)

Pasture ID (Field Record page)	Acres	Herd ID	# Head	Date In	Grass Height In	Date Out	Grass Height Out

(Include Field Record page in this Pocket Notebook in Property ID column)

Lease / Rent Agreements

Lessor Name, Location/Address	Property ID	Acres		Dates		Amount, Terms, Comments
		Total	Used	Start	End	

(Include Field Record page in this Pocket Notebook in Property ID column)

Herd Calving Record

Cow ID	Calf ID	Sex	CE	Birth		Weaning	
				date	weight	date	weight
CE = Calving Ease		1 = no assistance 2 = easy pull		3 = hard pull 4 = Caesarean or breech			

Herd Calving Record

Cow ID	Calf ID	Sex	CE	Birth		Weaning	
				date	weight	date	weight
CE = Calving Ease		1 = no assistance 2 = easy pull		3 = hard pull 4 = Caesarean or breech			

Solutions for Your Life

Your portal to the
Florida Cooperative
Extension Service

<http://sfyl.ifas.ufl.edu>

Find the UF/IFAS Cooperative Extension Office in your County at **Local Offices** on the Solutions page. Or go directly to most counties by typing your county name where you see “*yourcountyname*” in the URL below:

<http://yourcountyname.ifas.ufl.edu>

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<http://edis.ifas.ufl.edu>

UF/IFAS with many generous sponsors provides the **Florida Automated Weather Network**, with state-wide stations reporting temperature, rainfall, wind, humidity and other data for farms. Data are reported for 15 minute intervals. Select from over 30 weather stations.



<http://fawn.ifas.ufl.edu>

IPM Florida supports Integrated Pest Management practices, encouraging a more sustainable agriculture for Florida.



<http://ipm.ifas.ufl.edu>

The **Small Farms and Alternative Enterprises site**, an extensive knowledge base from IFAS Extension and other sources, should be your first stop for information for small scale farming, beginning farms, alternative enterprises, marketing, tourism, organic production and more.

<http://smallfarms.ifas.ufl.edu>

University of Florida IFAS – <http://ifas.ufl.edu>

College of Agriculture and Life Sciences – <http://cals.ifas.ufl.edu>

The Experiment Station (IFAS Research) – <http://research.ifas.ufl.edu>

Research/Education Centers – <http://research.ifas.ufl.edu/recs.asp>

School of Forest Resources and Conservation - <http://www.sfrc.ufl.edu>

4-H Youth - <http://www.florida4h.org>

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