STATUS ASSESSMENT RESPONSE FORM

Species (Botanical name): Citrus x aurantium

(Common name): Grapefruit, Sour Orange

Where the voucher specimen is held: USF, FLAS, FSU, FTG

☐ Assessment/ ☑ Reassessment completed by: Deah Lieurance

Date assessment started: 12/16/2016 Date assessment completed: 12/16/2016

INSTRUCTIONS

Either check appropriate response or enter it in the designated space.
Attach additional sheets with evidence as necessary using appropriate section numbers.

SUMMARY OF ASSESSMENT RESULTS

BY STATE

If species is NOT invasive in Florida, check one of the following three conclusions:

From Section A	Automatic Exemption
☐ **Use Predictive Tool**	☐ **Prohibited**

☐ **Not considered a problem species at this time**

BY ZONE

		North: Central: South		North: Central: South	
Index Score	**I** = 0 : {0} : 0			**M** = 6	
Category	**I** = L : L : L	**P** = L : L : H(L)*		**M** = L	**V** = L

Conclusions North OK, Not considered a problem species at this time

Central Caution, manage to prevent escape

South Caution, manage to prevent escape

In case of incomplete assessment:

Where did assessment stop?

Who could provide the answer to this question?

Automatic Exemption

Is this species listed on any federal or state noxious or prohibited plant lists?

☐ Yes *Under* "BY STATE" *on page R-1 check* **Prohibited**

☑ No **Go to Section I-a** below

Step-by-Step Assessment Responses

I-a Current Invasion in Florida

1. Is there a proposed or new use for a species that would result in higher propagule pressure* in Florida? For example, cultivation of ≥2 contiguous ac of a species for bioenergy (corresponding to DPI biofuel rule), or commercial cultivation of a species present in Florida for a new use, or increase in acreage cultivated from 1-10 ac to 10 times that acreage (10-100 ac), 10-100 ac to 5 times that acreage (50 to 500 ac), or >100 ac to 2.5 times that acreage.

   ☐ Yes **Use the Predictive Tool**

   ☑ No **Go to question I-a 2**

2. Does this species occur in any natural areas of Florida?

   ☑ Yes *Attach distribution records* and **Go to question I-a 3**

   ☐ No **Go to Section A**

3. Does it **ONLY** occur in natural areas of Florida because it has persisted from its previous cultivation?

   ☐ Yes *Attach evidence of previous cultivation for each site* and **Go to Section A**

   ☑ No **Go to Section I-b**

Section A is on page R-3 and Section I-b is on page R-4

☑ *Check box if distribution records are attached*

☑ *Check box if evidence of previous cultivation is attached*

Section A

A1 Does this species hybridize with any Federal or Florida-listed Endangered or Threatened species, Species of Special Concern, or economically important species (e.g., exhibit pollen /genetic invasion)?

☐ Yes — Provide *information below*. Enter a conclusion on page R-17 of **No unless limited use approved. Go to Section D** for details on how to make a proposal for specified and limited use for the species.

☐ No — **Go to question A2**

If yes, then *provide name of listed or economically important species & information sources*:

A2 Has this species been introduced to Florida within the last 10 years if herbaceous, or last 20 years if woody?

☐ Yes — **Use Predictive Tool** and so indicate on page R-1

☐ No — Highlight *attached distribution records that show presence in Florida before 10 or 20 years ago or attach other evidence* and **Go to question A3**

A3 Does this species have a record of causing problems in other regions with similar habitats and climate to Florida?

☐ Yes — *Provide evidence below*, **Use Predictive Tool** *and so indicate on page R-1*

☐ No — *Enter a conclusion of* **Not considered a problem species at this time and may be recommended by IFAS faculty** *on page R-1* but reassess if invasion of natural areas is recorded or within 10 years, whichever is earlier.

If yes, then *give evidence of where and what problems this species has caused*:

Section D is on page R-19

I-b Invasion Status in Three Zones of Florida

Check responses to the following questions for each zone (north, central, south) separately.

For "Yes" responses to questions 1-3, *distributional evidence of invasion* (forming self-sustaining and expanding populations within a plant community with which it has not previously been associated) *must be attached and distinguished for each zone*.

		North		Central		South	
		Yes	No	Yes	No	Yes	No
1.	Does species exist in areas outside its current, or former, cultivation in this zone?	☑	☐	☑	☐	☑	☐

If *Yes* **Go to question I-b 2**
If *No* **Go to question I-b 4**

		North		Central		South	
		Yes	No	Yes	No	Yes	No
2.	Is species invading in this zone **ONLY** when natural disturbance regime and scale have been altered?	☐	☑	☐	☑	☐	☑

If *Yes* **Go to question I-b 3**
If *No (or unknown)* **Go to Section II-a**

		North		Central		South	
		Yes	No	Yes	No	Yes	No
3.	Has this species ever been **known** to persist if the natural regime is resumed and the natural flora/communities recover?	☐	☐	☐	☐	☐	☐

If *Yes (or unknown)* **Go to Section II-a**
If *No* **Go to question I-b 4**

		North		Central		South	
		Yes	No	Yes	No	Yes	No
4.	Are there other zones in which this species has invaded or persisted after restoration?	☑	☐	☑	☐	☐	☐

If *Yes* indicate **I = 0 for this zone**
on page R-1 then **Go to Section III-b**
If *No* **Go to Section A**

Section II-a is on page R-5, Section III-b is on page R-10, Section A is on page R-3

☐ *Check box if distribution records by zone are attached*

II-a Known Impacts at WORST SITE(S) (without, or before, any control effort)

Add up points for **ALL** impact statements (i through vi) that are true at the worst affected site(s) in that zone then **Go to Section II-b**.

If scores are assigned, attach Ecological Impacts Worksheets that include citations and/or log of expert evidence.

Documentation of evidence of impacts for each zone (as defined in the Assessment Glossary) must be attached and include specific locations of observed impacts. If experts are providing evidence, their written and signed observations must be attached. Scientific names of impacted species (e.g., state-listed or native species with which hybridization occurs) must be included.

If there is no evidence of an impact then assign 0 points unless the impact is considered very likely (e.g., fixes N_2 in low nutrient soil which can change the flora) OR the impact (except vi) has been demonstrated in similar habitats in other zones or outside the state, OR if only one expert has documented the impact within the zone under consideration. In these cases assign 0.5 points.

		Points	North	Central	South
i)	Long-term alterations in ecosystem processes	**15**	0.5	0	0
ii)	Negatively impacted T & E species:				
	Documented loss has occurred	**12**	0.5	0	0
	Loss is considered very likely	**4**	0	0	0
iii)	Displaces or precludes native vegetation (see criteria in assessment)	**8**	0	0	0
iv)	Changes community structure	**4**	0	0.5	0.5
v)	Hybridizes with native or economic plants	**4**	0	0	0.5
vi)	Covers over 15% of invaded stratum (unless iii)	**1**	1	1	0.5
		Total	1	1.5	1.5

Section II-b is on page R-6

☐ *Check box if Impacts Worksheet is attached*

II-b Range of Community Groups in Which Species is Invasive

Is this species known to be invasive in at least four community groups OR does it occur in at least one community group of each of the terrestrial and palustrine/aquatic lists?

	North		Central		South	
If *Yes* list community groups below and multiply score from II-a by 1.5	Yes ☐	No ☐	Yes ☑	No ☐	Yes ☑	No ☐
If *No* multiply score from II-a by 1.0	**I** = X		2.25		2.25	

Copy these **I**mpact scores to page R-1. If I ≥ 12, **Go to Section II-c** on page R-7; If I < 12, **Go to Section III-a** on page R-9.

If yes, then *list relevant community groups for each zone***:**

North:

Central:
Floodplain wetlands, wet flatlands, mesic uplands, mesic flatlands, basin wetlands, xeric uplands

South:
xeric uplands, mesic flatlands, wet flatlands, Floodplain wetlands, mesic uplands, Rocklands

II-c Proportion of Invaded Natural Areas/Sites with Significant Impacts

Of the invaded sites, might any of the worst (statements i to v in Section II-a) impacts *only* occur under a few, identifiable, environmental conditions (i.e., conditions that occur in only 1 to 10% of the sites)?

To answer this question, for each statement in Section II-a, i – v that gets a score (> 0.5), determine the percentage from this table. Calculate the percentage separately for each zone.

	A) Number of Natural Areas/Sites with a *Yes* Answer*			B) Total Number of Natural Areas/Sites		
	North	Central	South	North	Central	South
i)	_____	_____	_____	_____	_____	_____
ii)	_____	_____	_____	_____	_____	_____
iii)	_____	_____	_____	_____	_____	_____
iv)	_____	_____	_____	_____	_____	_____
v)	_____	_____	_____	_____	_____	_____
TOTAL	_____	_____	_____	_____	_____	_____
Total A/Total B x 100 = %	_____	_____	_____	_____	_____	_____

If the percentage is between 1-10% from the table above, check *Yes*:

North		**Central**		**South**	
Yes	No	Yes	No	Yes	No
☐	☐	☐	☐	☐	☐

If *Yes* — *Documentation of evidence must be included in Ecological Impacts Worksheet*s and **Go to Section B**

If *No* or *No score* — **Go to Section III-a**

**Yes* responses must receive a score. If only 1 individual reports any impacts, the result of which would be a 1-10% score, seek a second opinion on that impact/site.

Section B is on page R-8 and Section III-a is on page R-9

Section B

B1 Can the specific habitats and communities in which significant impacts occur be clearly defined as different from invaded sites where there are no such impacts?

North		**Central**		**South**	
Yes	No	Yes	No	Yes	No
☐	☐	☐	☐	☐	☐

If *Yes* Attach such a site definition including documentation of evidence and **Go to Question B2**

If *No* **Go to Section III-a**

B2 Can maximum distance of propagule/ pollen dispersal be estimated?

North		**Central**		**South**	
Yes	No	Yes	No	Yes	No
☐	☐	☐	☐	☐	☐

If *Yes* Attach a definition of that distance of dispersal including Documentation of evidence, complete Sections III, IV, and V to derive information on Potential for Expansion, Management Difficulty and Commercial Value. Enter a conclusion of No unless limited use approved on page R-17. Go to Section D for details on how to make a proposal for specified and limited use for the species.

If *No* Go to Section III-a

Section III-a is on page R-9 and Section D is on page R-19

☐ *Check box if site definition is attached*

☐ *Check box if definition of distance of dispersal is attached*

ONLY For Zones Where Plant Has Invaded **(*Strike out un-invaded zones)***

III-a Known Rate of Invasion.

		North		Central		South	
1.	Was this species reported in more than two new discrete populations in any 12 month period within the last 10 years?	Yes	No	Yes	No	Yes	No
		☐	☑	☑	☐	☑	☐

If *Yes* Indicate **P = High**, *highlight relevant reports on the distribution records and list these sites below* and **Go to Section IV**

If *No* or *Unknown* Indicate **P = Low** and **Go to Section IV**

	North	Central	South
P =	L	H	H

Copy these Potential values to page R-14; ***Section IV*** *is on page R-12*

If yes, then *list relevant new sites invaded for each zone:*

North:

Central:
See file for C and S records

South:

ONLY For Zones Where Plant Has NOT Invaded. ***(Strike out invaded zones)***

III-b Potential for Invading Non-invaded Zones

1. Would this species be able to survive, reproduce, and disperse in the climate of this zone?

North		**Central**		**South**	
Yes	No	Yes	No	Yes	No
☐	☐	☐	☐	☐	☐

If *Yes* *Provide documented evidence below* and **Go to question III-b 2**
If *No* Indicate **P** = **Low** below and **Go to Section IV**

2. Do habitat-types suitable for the growth of this species occur in this zone?

North		**Central**		**South**	
Yes	No	Yes	No	Yes	No
☐	☐	☐	☐	☐	☐

If *Yes* *Provide documented evidence below* and indicate that **P** for this non-invaded zone is equal to the **P** assigned to the nearest invaded zone (from Section III-a - if there is an option between two zones with **P** = High or Low, use High).

If an adjacent zone is invaded **Go to Section III-c**
If the only adjacent zone is non-invaded **Go to Section IV**

If *No* Indicate **P** = **Low** below and **Go to Section IV**

	North	**Central**	**South**
P =	H	H	X

*Copy these **P**otential categories to page R-14*

If yes, then *provide evidence that suitable climate and habitat-types for survival and impacts exist in zone(s):* Zone = _____:

Section III-c is on Page R-11 and Section IV is on page R-12

ONLY For Zones Where Plant Has NOT Invaded But Has The Potential To Invade.

III-c Potential for Causing Ecological Impacts in Non-invaded Zones

1. For zones invaded by this species, identify all communities in which any ecological impacts identified in Section II-a occur. Do these communities occur in the un-invaded zone under consideration (e.g., do the negatively impacted Federal- or Florida-listed Endangered or Threatened species or Species of Special Concern occur in this zone)? If no impacts were documented in any zones for this species, the response here is **NO**.

North		**Central**		**South**	
Yes	No	Yes	No	Yes	No
☐	☐	☐	☐	☐	☐

If Yes *Provide documented evidence below* and revise the **Ecological Impact Score** for this zone from zero to match the **Ecological Impact Score** for the adjacent invaded zone (use highest value if there is an option; mark this revised score with brackets{} to show this score was derived from Section III-c) then **Go to Section IV**

If No **Go to Section IV**

If yes, *provide evidence that communities where ecological impacts occur exist in non-invaded zone(s):* Zone = _____:

Section IV is on page R-12

IV Factors That Increase the Difficulty of Management

If scores are assigned, attach Management Worksheets that include citations and/or log of expert evidence.

Add up all points from statements that are true for this species and documentation of evidence must be provided. Assign 0.5 point for each statement for which a true/false response is not known.

	Points	All Zones
i) No known permitted control techniques.	**15**	0
ii) Difficult to control without damage to native species in:		
≥50% of discrete sites;	**10**	0
25% to 50% of discrete sites.	**7**	0
iii) Total costs of control per acre in **first year** are > $1,500/acre	**5**	0.5
iv) Further site restoration is necessary following plant death.	**5**	0
v) Total area to be managed: ≥ 500 acres;	**5**	5
< 500 but > 50 acres.	**2**	0
vi) Re-treatments following the first year of control expected:		
at least once a year for the next 5 years;	**5**	5
1 to 4 times over the next 5 years OR regrowth not known.	**2**	0
vii) Access to most areas is difficult.	**3**	3
viii) Occurs in more than 20 discrete populations.	**3**	3
ix) Many persistent or dispersed propagules per plant	**3**	3
x) Early reproduction.	**2**	0.5
	Total for M =	20

*Copy these **M**anagement scores to page R-1 then **Go to Section V** on page R-13*

☐ *Check box if Management Worksheet is attached*

V Economic Value

1. Does this species have any economic value in Florida?

☑ Yes **Go to question V - 2**

☐ No Indicate **V = No** on page R-1, but treat as **Low** in the Conclusions table on page R-16. **Go to Conversion of Index Scores to Index Categories.**

2. Is this species sold in national or regional retail stores? (E.g., WalMart, Home Depot, Publix supermarkets.)

☑ Yes **Go to Conversion of Index Scores to Index Categories** on page R-14 and indicate V = High

☐ No **Go to question V - 3.**

3. State-wide are there more than 10 commercial growers of this species?

☐ Yes **Go to Conversion of Index Scores to Index Categories** on page R-14 and indicate V = High

☐ No **Go to question V - 4.**

4. Does this species have economic value for forage, biomass, or remediation purposes?

☐ Yes If net value ≥ $50,000 / yr, **Go to Conversion of Index Scores to Index Categories** (page R-14) and indicate V = High

☐ No If net value < $50,000 / yr, **Go to Conversion of Index Scores to Index Categories** (page R-14) and indicate V = Low

Conversion of Index Scores to Index Categories is on page R-14

Conversion of Index Scores to Index Categories

Using the following table, determine the appropriate category (Low to High or Very High) for each index. (Categories for Potential for Expansion Index and Commercial Value were copied from Pages R-9, R-10, and R-13)

Category		Impacts	Management Difficulty
Low	(L)	< 12	< 15
Medium	(M)	12 - 26.4	
High	(H)	26.5 – 41	≥ 15
Very High	(VH)	> 41	

	Impact			Potential			Management	Value
	North	Central	South	North	Central	South	All zones	All zones
Category	L	L	L	L	H	H	H	H

*Copy these Index categories to page R-1 then **Go to Conclusions** on pages R-15 & 16*

Conclusion **For Zones where conclusions were NOT developed in Section D**

Conclusions are derived separately for each zone from the combined index categories using the table on page R-14. Whenever new information becomes available about the invasive status of a species (e.g., new populations, new data on ecological impacts) that species should be reviewed and if necessary reassessed. The following text corresponds to the abbreviations in the table on page R-14 (text in bold is approved language for IFAS documents, text in parentheses provides additional instructions to IFAS faculty and for reassessment):

OK =

Not considered a problem species at this time (may be recommended by IFAS faculty and reassess in 10 years).

Caution =

Caution - manage to prevent escape (may be recommended by IFAS faculty and reassess in 2 years).

No - unless limited use approved =

Go to Section D for details on how to make a proposal for specified and limited use for the species.

If a proposal for specified and limited use has not been approved by the IFAS Invasive Plant Working Group (IPWG) the conclusion is:

Invasive and not recommended by IFAS faculty (reassess in 10 years - a proposal for specified and limited use may be submitted to the IPWG at any time). In IFAS publications, reference can be made to the Web site for the Center for Aquatic and Invasive Plants (http://plants.ifas.ufl.edu/assessment) to determine if any specified and limited uses have been approved since the time of publication.

If a proposal for specified and limited use has been approved by the IPWG the conclusion is:

Invasive and not recommended by IFAS faculty except for "the specified and limited" use that has been approved by the IFAS Invasive Plants Working Group (reassess in 2 years).

OR

Predicted to be invasive*: Recommended only under specific management practices agreed upon by the IFAS Invasive Plant Working Group (reassess in 2 years).
In IFAS publications the term "specified and limited" would be replaced by a summary of the specific use that has been approved (e.g., indoor foliage). Details of approved specified and limited uses are to be kept with other assessment documentation.

No =

Invasive and not recommended by IFAS faculty (reassess in 10 years).

*Reported invasiveness in environments similar to but outside of Florida is one basis for this conclusion

Determine Index Categories for ALL zones before starting this Section.
For each zone identify the combination of Index categories from page R-14 in the table below. The asterisk indicates the appropriate Conclusion. Footnotes and space for recording the Conclusions are provided on page R-17.

Index Categories
L/H = either Low or High

Conclusions
See page R-15 for full text for conclusions

Impact	**Potential**	**Manage.**	**Value**	***No***	***No unless limited use approved***	***Caution***	***OK***
VH	L/H	L/H	L/H	*			
H	H	H	L	*			
H	H	H	H	*			
H	H	L	L	*			
H	H	L	H		*[1]		
H	L	H	L	*			
H	L	H	H		*[1]		
H	L	L	L	*			
H	L	L	H		*[1]		
M	H	H	L	*			
M	H	H	H		*[1]		
M	H	L	L	*			
M	H	L	H		*[1]		
M	L	H	L	*			
M	L	H	H		*[1]		
M	L	L	L		*[1]		
M	L	L	H		*[1]		
L	H	H	L			*[2]	
L	H	H	H			*[2]	
L	H	L	L			*[2]	
L	H	L	H			*[2]	
L	L	L/H	L/H				*[2, 3]

Footnotes for table of Conclusions

[1] Enter a conclusion of **No unless limited use approved** in the spaces below. **Go to Section D** on page R-19 for details on how to make a proposal for specified and limited use for the species.

[2] If a zone is invaded and has Impact = Low or Medium but the adjacent zone has Impact = High or Very High or has received a **No** or **No unless limited use approved** conclusion via Section C, then for the invaded zone under consideration **Go To Section C**.

[3] For zones where a species has not invaded, if Potential = Low but Impacts in an adjacent invaded zone are Medium, High, or Very High, then use **Caution** for the un-invaded zone. If Impact = Low in the adjacent zone or it is not yet invaded, then retain **OK**.
Because the Conclusion for one zone can be modified by the Index Categories or Conclusions for an adjacent zone, be sure to check Conclusions for each zone twice.

Conclusions North OK

Central Caution

South Caution

Copy these Conclusions to page R-1; Section C is on page R-18; Section D is on page R-19.

Section C

C1 Was the first record of this species in natural areas of this zone less than 10 years ago if herbaceous or less than 20 years ago if woody?

☐ Yes *Highlight distribution records that show first documentation in Florida is less than 10 or 20 years ago* then **Go to question C2**

☐ No Conclusion for this zone remains as **Caution - manage to prevent escape** OR **Not considered a problem species at this time**.

C2 Can this species reproduce and disperse in this zone?

☐ Yes The conclusion for this zone is **Invasive and not recommended by IFAS faculty** OR **Invasive and not recommended by IFAS faculty except for the specified and limited use that has been approved by the IFAS Invasive Plants Working Group** to match the adjacent, highly impacted zone. However, do not alter the **Ecological Impact** category for this zone from Low or Medium. (Thus, if there is an adjacent non-invaded zone, the **Ecological Impact** category for that zone will remain Low or Medium.) The assessment for this zone can be considered complete now, even if the "documentation of evidence" requirement for **Ecological Impacts** is not fulfilled (i.e., there are only one or two expert opinions on this species in this zone).

☐ No Conclusion for this zone remains as **Caution - manage to prevent escape** OR **Not considered a problem species at this time**

Select appropriate Conclusion and enter it on Page R-1 and R-16

If yes, then *provide evidence of reproduction and dispersal in this zone:* Zone = _____

Section D

If there are specific circumstances in which this species could be used that would not be expected to result in escape and invasion (e.g., foliage plants that are only used indoors and which can be reasonably prevented, by conspicuous labeling, from use or disposal in the landscape) **OR** if it is possible to define how to avoid dispersal of this species to habitats where its impacts are high (i.e., from Section B), then based on a proposal that is approved by the IPWG the conclusion becomes **Invasive and not recommended by IFAS faculty except for "the specified and limited" use that has been approved by the IFAS Invasive Plants Working Group**. The proposal for specified and limited use should document how invasion would be prevented, and should stipulate that disposal of any propagules must ensure their destruction. Reassess this species in 2 years (or in the case of referrals from Section B, immediately if the incidence of worst-case impacts increases above 10%.)

In IFAS publications the term "the specified and limited" would be replaced by a summary of the specific use that has been approved (e.g., indoor foliage).

Conditions of **Acceptable Specified and Limited Use**:

Further information needed: