STATUS ASSESSMENT RESPONSE FORM

Species (Botanical name): Cajanus cajan							
(Common name): Pigeon pea							
Where the voucher specimen is held: <u>USF, FLA</u>	AS, FTG						
Assessment/ Reassessment completed b							
Date assessment started: 6/13/2016	Date assessment completed: 6/13/2016						
Either check appropriate respon	RUCTIONS se or enter it in the designated space. necessary using appropriate section numbers.						
SUMMARY OF ASSESSMENT RESULTS							
BY STATE If species is NOT invasive in Florida, check on	e 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 Index	orth: Central: South						
Score I = : :	$\mathbf{M} =$						
Category I = : P =	: $\mathbf{M} = \mathbf{V} =$						
Conclusions North							
Central							
South							

In case of incomplete assessment:

Where did assessment stop?

Who could provide the answer to this question?

Automatic Exemption						
Is this sp	ecies 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 Ir	<u>vasion in Florida</u>				
1.	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 O l cultivation	NLY occur in natural areas of Florida because it has persisted from its previous 1?				
	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				
	3000 00 00 00 00 00 00 00 00 00 00 00 00	Check box if distribution records are attached□ Check box if evidence of previous cultivation is attached				

ecti	ion A						
A1	Does this species hybridize with any Federal or Florida-listed Endangered or Threaten species, Species of Special Concern, or economically important species (e.g., exhibit pollen /genetic invasion)?						
	Yes	Provide <i>information below</i> . 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	s, then <i>provide</i>	e name of listed or economically important species & information sources:					
A2	Has this sp 20 years if	ecies been introduced to Florida within the last 10 years if herbaceous, or last 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		pecies have a record of causing problems in other regions with similar habitats e 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.					
		vidence of where and what problems this species has caused: ER WRA score 0=Low risk.					

I-b Invasion Status in Three Zones of Florida								
Check responses to the following questions for each zon	ne (north, centr	al, south) sepa	nrately.					
and expanding populations within a plant community	For "Yes" responses to questions 1-3, <i>distributional evidence of invasion</i> (forming self-sustaining and expanding populations within a plant community with which it has not previously been associated) <i>must be attached and distinguished for each zone</i> .							
 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 Yes No ☐ 🗹	Central Yes No ☐ 🗸	South Yes No					
 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 Yes No	Central Yes No	South Yes No					
3. Has this species ever been known to persist if the natural regime is resumed and the natural flora/communities recover? If <i>Yes</i> (or unknown) Go to Section II-a If <i>No</i> Go to question I-b 4	North Yes No	Central Yes No	South 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 	North Yes No □ 🗹	Central Yes No	South Yes No					
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 <u>worst affected site(s) in</u> 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 <u>written and signed observations</u> 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 <u>unless</u> 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			
ii)	Negatively impacted T & E species:				
	Documented loss has occurred	12			
	Loss is considered very likely	4			
iii)	Displaces or precludes native vegetation (see criteria in assessment)	8			
iv)	Changes community structure	4			
v)	Hybridizes with native or economic plants	4			
vi)	Covers over 15% of invaded stratum (unless iii)	1			
		Total			

Section II-b is on page R-6

	Check	box if	^c Impacts	Worksheet	is	attachea
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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?						
If Yes list community groups below and multiply score from II-a by 1.5 North Yes No Yes No Yes No III-a Description III						
If No multiply score from II-a by 1.0 $I = $						
Copy these Impact scores to page R-1. If $I \ge 12$, 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:						
South:						

				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
II-c <u>Propo</u>	rtion of Inva	ided Natural Arc	eas/Sites with	Significant I	<u>mpacts</u>	***************************************		
		•	,			npacts only occur only 1 to 10% of		
	-	on, for each stage from this tabl			_	a score (> 0.5), 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 <i>Yes</i> :								
		North Yes No □ □	Central Yes No □ □		th No			
If Yes	If Yes Documentation of evidence must be included in Ecological Impacts Worksheets and Go to Section B					ological Impacts		
If No	or <i>No score</i>	Go to Se	ction 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

Sectio	n B		***************************************	***************************************	
B1	communities i	ic habitats and in which significant be clearly defined as invaded sites where uch impacts?	North Yes No	Central Yes No	South Yes No
	If <i>Yes</i> Attach such a site definition including documentation of evi to Question B2				
	If No	Go to Section III-a			
B2		n distance of propagule/ al be estimated?	North Yes No	Central Yes No	South Yes No
	If Yes	Attach a definition of that dist evidence, complete Sections I Potential for Expansion, Mana Enter a conclusion of No unle Section D for details on how t use for the species.	II, IV, and V to a agement Difficul ss limited use ap	lerive informati ty and Commer proved on page	ion on reial Value. R-17. Go to
	If No	Go to Section III-a			
		Section III-a is	s on page R-9 an	d Section D is c	on page R-19
		Check box i	f site definition is	s attached	
		☐ Check box if	definition of dist	tance of dispers	al is attached

ONLY For Zones Where Plant Has Invaded (Strike out un-invaded zones)							
III-a	Known Rate of Invasi	on.					
1.	Was this species reported in more than two new discrete populations in any 12 Yes No Yes No Month period within the last 10 years?						
	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	l Go to Sectio	n IV			
			North	Central	South		
		P =					
	Сору	these Potential values t	to page R-14;	Section IV is on	 page R-12		
If ye	s, then <i>list relevant nev</i>	v sites invaded for each .	zone:				
Nort	h:						
Cent	ral:						
Sout	h·						
Sout							

	ONLY For	r Zones Where Plant Has NO	Γ Invaded. (Str	ike out invaded	zones)	
III-b	Potential for	Invading Non-invaded Zones				
1.		species be able to survive, and disperse in the climate?	North Yes No	Central Yes No	South Yes No	
	If Yes If No	Provide documented evidence Indicate P = Low below and		-	-b 2	
2.		types suitable for the growth ies occur in this zone?	North Yes No	Central Yes No	South 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 =	Copy these P o	otential categori	es to page R-14	
	s, then $provide$ $ne(s)$: Zone =	e evidence that suitable climate o	and habitat-type.	s for survival an	d impacts exist	
		Section III-c i	s 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							
	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							
-	provide evid	lence that communities where ecological impacts occur exist in non-invaded:							
		Section IV is on page R-12							

IV	Factors	That	<u>Increase</u>	the	Difficulty	of Ma	anagement

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	
ii) Difficult to control without damage to native species in: ≥50% of discrete sites; 25% to 50% of discrete sites.	10 7	
iii) Total costs of control per acre in first year are > \$1,500/acre	5	
iv) Further site restoration is necessary following plant death.	5	
v) Total area to be managed:≥ 500 acres; < 500 but > 50 acres.	5 2	
vi) Re-treatments following the first year of control expected: at least once a year for the next 5 years; 1 to 4 times over the next 5 years OR regrowth not known.	5 2	
vii) Access to most areas is difficult.	3	
viii) Occurs in more than 20 discrete populations.	3	
ix) Many persistent or dispersed propagules per plant	3	
x) Early reproduction.	2	
	Total for M =	=

Copy these Management scores to page R-1 then Go to Section V on page R-13

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.	-	Go to question V - 2 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. ecies sold in national or regional retail stores? (E.g., WalMart, Home Depot, permarkets.) Go to Conversion of Index Scores to Index Categories on page R-14 and indicate V = High Go to question V - 3.				
	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-wid					
	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	Go to Conversion of Index Scores to Index Categories on page R-14 and indicate V = High Go to question V - 4. species have economic value for forage, biomass, or remediation 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 $< $50,000 / \text{ yr}$, 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)

<u>Category</u>			<u>Impacts</u>		<u>Ma</u>	nagemer	nt Difficulty	
Low	(L)		< 12			< 15		
Medium	(M)		12 - 26.	4				
High	(H)		26.5 - 4	1		≥15		
Very High	ı (VH	()	> 41					
	<u>In</u>	<u>npact</u>			Potential		Management	<u>Value</u>
	North	Central	South	North	Central	South	All zones	All zones

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

Conclusion

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.

<u>Index Categories</u> L/H = either Low or High

<u>Conclusions</u>
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 H H H	H H H L L L	H H L L H H H	L H L H L H L	* * * * *	*1		
H M	L H	L H	H L	*	*1 *1		
M M M M M M	H H H L L L L	H L L H H L L	H L H L H L H	*	*1 *1 *1 *1 *1		
L L L L L	H H H H L	H H L L L/H	L H L H L/H			*2 *2 *2 *2	*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 <u>adjacent zone</u> 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 <u>not</u> invaded, if Potential = Low but Impacts in an <u>adjacent invaded</u> 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

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
	Central
	South

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

Section C								
C 1	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 s	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	s, then <i>provi</i>	de 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:	- 22
	000000000000000000000000000000000000000
	3000000000
	500000000000
	000000000000000000000000000000000000000
	90000000000
	000000000000000000000000000000000000000
	Х
	30000000000000000000000000000000000000
	80000