

CULTIVAR OPTIONS FOR GEORGIA ORCHARDS



Dr. Patrick Conner
University of Georgia – Tifton Campus



THE UNIVERSITY OF GEORGIA
COLLEGE OF AGRICULTURAL &
ENVIRONMENTAL SCIENCES

THERE IS NO PERFECT VARIETY

Look at strengths vs. weaknesses. Trade offs will need to be made.

Scab resistance vs. nut quality

Early production vs. stable production

Proven performance vs. new varieties

Scab resistance vs. aphid susceptibility



Scab Resistance

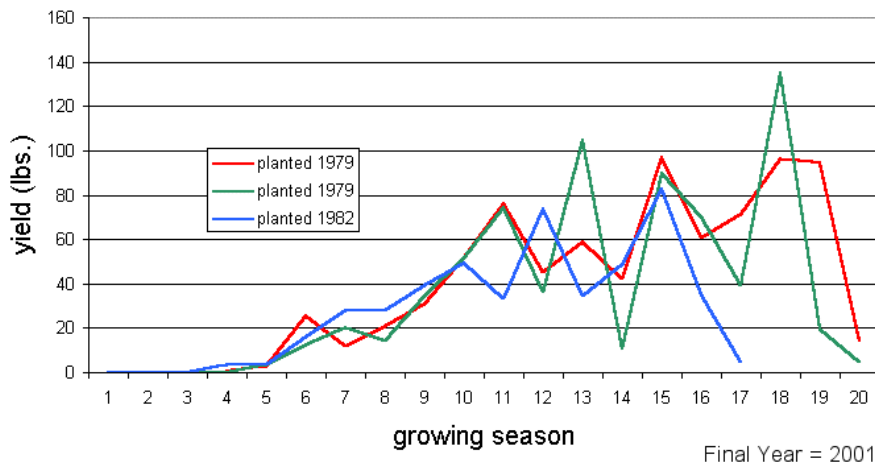
- A primary factor in cultivar choice.
- The resistance of a pecan cultivar will be influenced by the races present where it is grown.
- There tends to more scab pressure as you go south and east.
- Do not plant a susceptible cultivar if you can not spray.



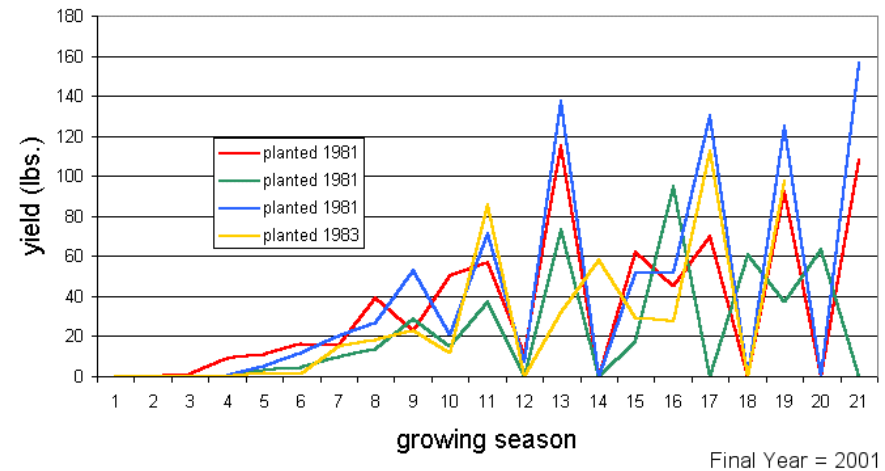
Alternate Bearing

- Mature trees tend to bear alternately.
- Generally, precocious cultivars bear alternately more as mature trees.
- Will you summer shake to reduce your crop?

Caddo



Creek



Harvest Date

- Early nuts often have a price advantage.
- Will you be able to harvest the nuts before the crows?
- Will the trees be in a large solid block?
- Will the equipment be ready on time?
- What is the harvest date of your other cultivars?



Nut Size and Quality

- Large nuts sell for a premium if quality is good.
- Large nuts often have more trouble filling.
- Small nuts often have to be sold in larger batches and marketed well to bring high prices. This can be difficult for a new grower.



What not to base your selection on.

“That’s all the nursery had left.”

- Talk to the nursery at least a year in advance, trees are in short supply.
- Some cultivars will not be widely available.



Cultivars with Excellent Scab Resistance.

Recommended

Caddo
Desirable
Elliott
Forkert
Kanza
Oconee
Pawnee
Sumner

Recommend Conditionally

Cape Fear
Creek
Kiowa

Recommended for Trial

Amling
Byrd
Excel
Lakota
Mandan
McMillan
Morrill
Zinner



Amling

Excellent overall pest resistance.

Medium sized nut.

Pretty, oily kernel.

Protandrous (Type I) flowering.



Amling



Need to know the productivity of this cultivar. Otherwise it looks very good.

Cultivar	Nuts / pound	% Kernel	Harvest	Nut scab	Black aphid damage
Amling	57	55	Oct. 17	1.0 (1.0)	1.0 (1.0)
Desirable	44	53	Oct. 14	2.5 (4.4)	1.7 (2.7)

Excel

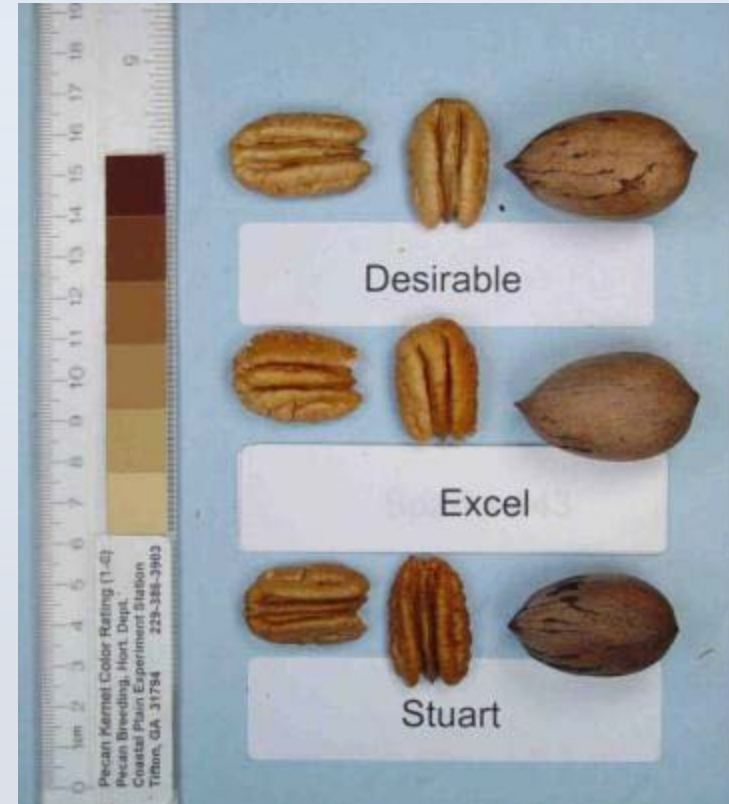
Excellent overall pest resistance.

Large sized nut.

Thick shell reduces % kernel.

Thin canopy.

Earliness is variable, not early in Tifton.





Excel

Yield (pounds / tree) of Excel each year from planting.

Cultivar	1	2	3	4	5	6	7	8	9	Avg.
Excel	0	0	0	0.2	3	6	28	24	39	11
Desirable	0	0	0	0.5	3	12	20	20	45	12
Stuart	0	0	0	0	1	7	20	30	54	12

One of the few scab “immune” cultivars with large nut size.



Cultivar	Nuts / pound	% Kernel	Harvest	Nut scab	Black aphid damage
Excel	44	49	Oct. 13	1.0 (1.0)	1.3 (2.2)
Desirable	44	53	Oct. 14	2.5 (4.4)	1.7 (2.7)

McMillan

Excellent overall pest resistance.
Medium sized nut.
Medium quality kernel.
Excellent productivity.



McMillan

Yield (pounds / tree) of Excel each year from planting.

Cultivar	1	2	3	4	5	6	7	8	9	10	Avg.
McMillan	0	0	0	0.8	3	18	24	63	35	90	23
Desirable	0	0	0	0.5	3	12	20	20	45	53	12
Stuart	0	0	0	0	1	7	20	30	54	48	12

A very good low-input tree.
High yield in 2011 with 48-46% kernel.
Similar quality to Stuart



Cultivar	Nuts / pound	% Kernel	Harvest	Nut scab	Black aphid damage	
McMillan	51	50	Oct. 12	1.0 (1.0)	1.5 (2.2)	
Desirable	44	53	Oct. 14	2.5 (4.4)	1.7 (2.7)	

McMillan – 53 nuts/lb 49% kernel

Stuart – 45 nuts/lb 45% kernel

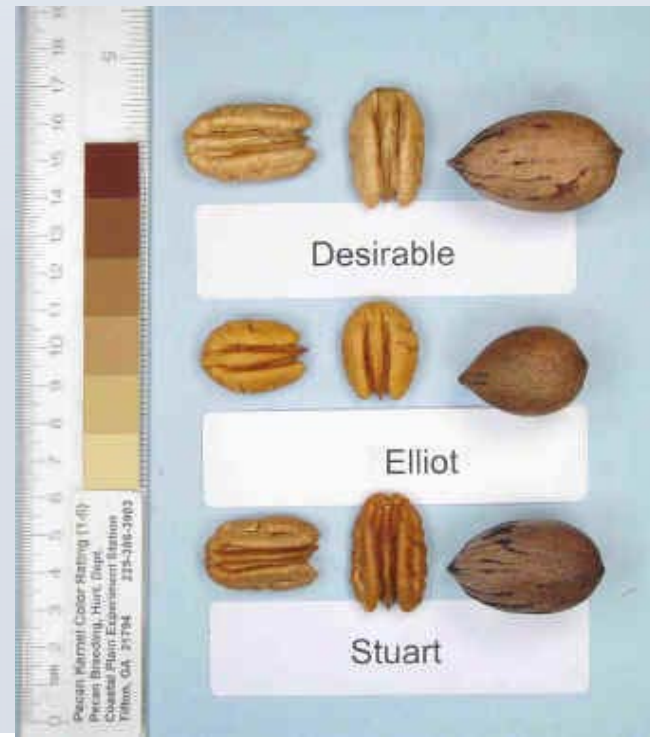


Elliott

77 nuts/lb.

51% kernel

- Excellent resistance.
- Good quality kernel.
- Well-known to buyers.
- Alternates.
- Small nut size.
- Freeze damage in north.
- Yellow aphids a common pest.



Kanza

68 nuts/lb.

51% kernel



- Similar nut to ‘Elliott’.
- Cold hardy.
- Early harvest data, end of September.
- Small nut size.
- Tends to alternate.

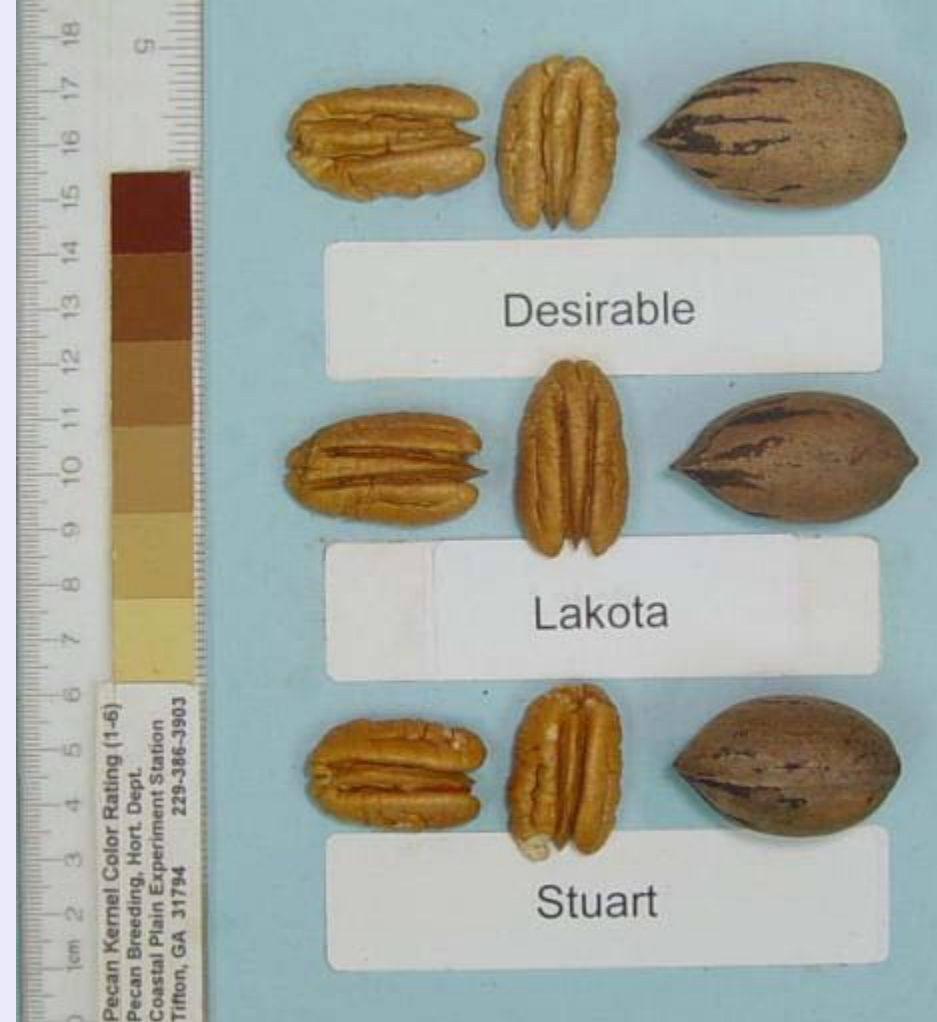


Lakota

59 nuts/lb.

62% kernel

- 2007 USDA release.
- Good scab resistance so far.
- Harvest end of Sept.
- Medium sized nut?
- Bred for northern regions.
- Little testing in this region.



Cultivars with Good Resistance

Recommended

Caddo
Desirable
Elliott
Forkert
Kanza
Oconee
Pawnee
Sumner

Recommend Conditionally

Cape Fear
Creek
Kiowa

Recommended for Trial

Amling
Byrd
Excel
Lakota
Mandan
McMillan
Morrill
Zinner



Sumner

Nut similar to 'Schley'.

Good scab resistance.

Late harvest date.

Preferred by black aphids.

Can over bear as a mature tree.

Very popular in Georgia as a scab resistant cultivar.



Cultivar	Nuts / pound	% Kernel	Harvest	Nut scab	Black aphid damage
Sumner	56	54	Oct. 29	1.0 (1.0)	1.3 (2.2)
Desirable	44	53	Oct. 14	2.5 (4.4)	1.7 (2.7)



Creek

55 nuts/lb.

48% kernel

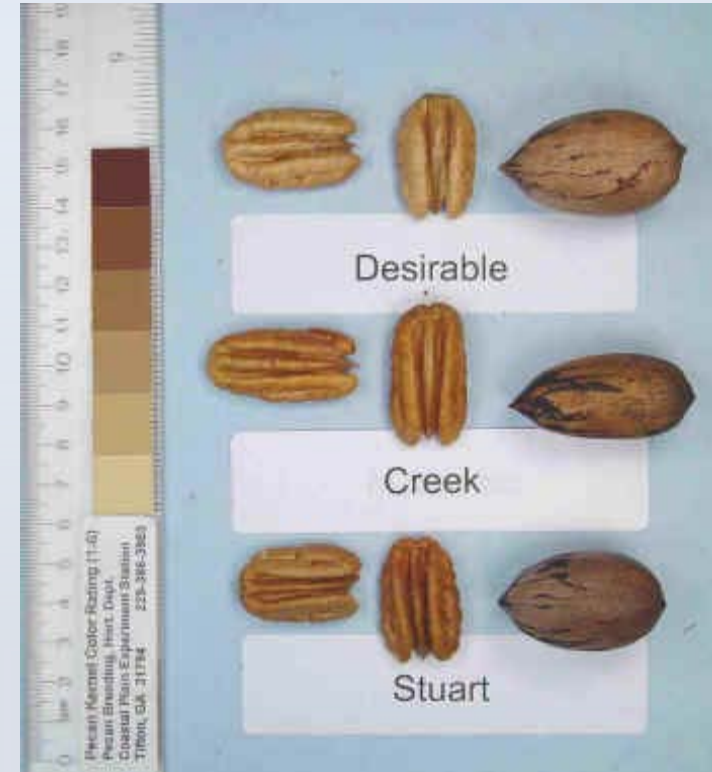
USDA release in 1996.

Overloads badly, needs crop thinning.

Upright strong tree.

Reported to bear well in competition.

Only plant it if you will crop thin!



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Cultivars with Mediocre Resistance

Recommended

Caddo
Desirable
Elliott
Forkert
Kanza
Oconee
Pawnee
Sumner

Recommend Conditionally

Cape Fear
Creek
Kiowa

Recommended for Trial

Amling
Byrd
Excel
Lakota
Mandan
McMillan
Morrill
Zinner



Oconee

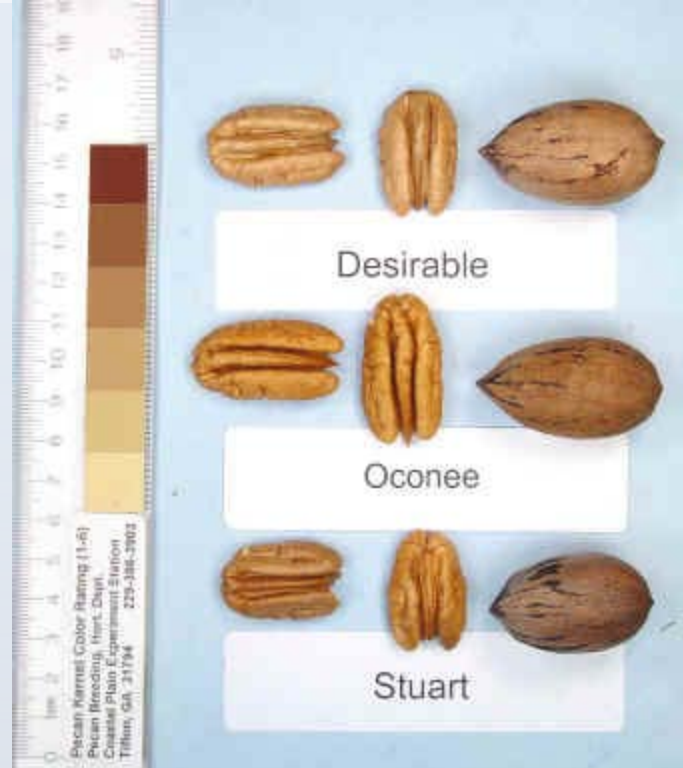
48 nuts/lb. 53% kernel

Large nut size and good quality.

Variable scab resistance.

Vigorous tree is precocious.

Preferred cultivar for black aphids.



Cape Fear

55 nuts/lb. 51% kernel

USDA release in 1996.

Precocious and needs crop thinning.

Scabs badly in some locations.

Susceptible to bacterial leaf scorch.





Cape Fear showing
defoliation from bacterial
leaf scorch.

1/23/1999

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Cultivars with Low Scab Resistance.

Recommended

Caddo

Desirable

Elliott

Forkert

Kanza

Oconee

Pawnee

Sumner

Recommend Conditionally

Cape Fear

Creek

Kiowa

Recommended for Trial

Amling

Byrd

Excel

Lakota

Mandan

McMillan

Morrill

Zinner



Desirable

44 nuts/lb.

53% kernel

#1 Cultivar in Georgia

Extremely susceptible to scab, must be sprayed often.

Consistent bearing from year to year.

Easier to grow in middle Georgia.



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Pawnee

56 nuts/lb. 54% kernel

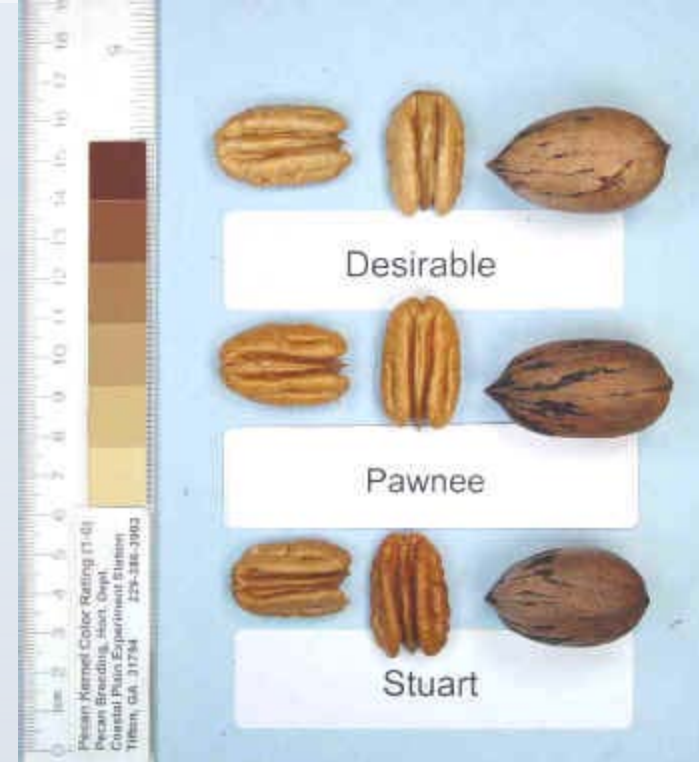
Ready to shake in Mid-September.

Will need to shake twice.

Susceptible to scab.

Easier to grow in middle Georgia.

Veining and spotting is common in some years.



UGA Releases

Byrd, Morrill, Cunard

All are new, have only been released a few years.

Very precocious cultivars, will need top quality management.

Not clear what the level of scab resistance will be.

Not recommended for new growers.



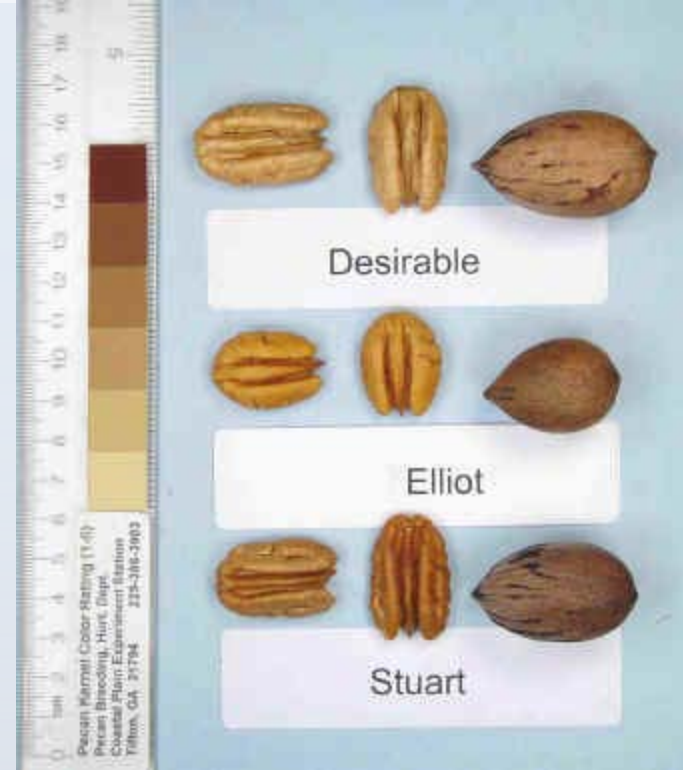
Stuart

48 nuts/lb. 45% kernel

Well known, but no compelling reason
to plant this cultivar any more.

Marginal nut quality at best.

Old trees can be profitable.



My picks for small low-input plantings.

McMillan

Excel

Lakota - trial

Kanza - in northern areas

Amling (pollinator)



My picks for sprayed plantings.

McMillan

Excel

Kanza - in northern areas

Lakota - trial

Amling (pollinator)

- All will need aphid control.

Sumner

Elliott

Oconee (pollinator) - Less scab resistance than Sumner and Elliott.

Cape Fear – luck of the draw with scorch, needs to be crop thinned.



Where to get more information.

Pecan Grower's Handbook.

Pecan Breeding Website : Google for 'UGA Pecan Breeding'



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- √ Commodities
- √ Fruits & Vegetables
- √ **Pecan Breeding**
 - About Us
 - Cultivar Info
 - Cultivar List
 - Home & Garden
 - History & Facts
 - Papers
 - Presentations
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 - Contact Us
 - Related Links



UGA Pecan Breeding Program

The University of Georgia established a pecan breeding program in 1998. The ultimate goal of this breeding program is to develop pecan cultivars adapted for use in the humid southeastern U.S. Potential new cultivars are selected on the basis of large nut size, good cracking and shelling characteristics, early nut maturity, light colored kernels, and a cluster size small enough to ensure adequate filling. Resistance or tolerance to

Program Coordinator

**Patrick J.
Conner**

Phone: (229)
386-3903

Email:
pconner@uga.edu

Vegetables

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[Pollen shed and pistil receptivity chart.](#)

[Pecan Nursery List](#)

Recommended Cultivars for Georgia.

[Caddo](#)

[Elliot](#)

[Kanza](#)

[Pawnee](#)

[Desirable](#)

[Forkert](#)

[Oconee](#)

[Sumner](#)

Cultivars Not Recommended that Have Merit in Some Situations

[Cape Fear](#)

[Creek](#)

[Kiowa](#)

Cultivars Recommended for Trial.

[Byrd](#)

[Excel](#)

[Lakota](#)

[Mandan](#)

[McMillan](#)

[Zinner](#)

Cultivars Recommended for low-input or high scab pressure locations.

[Amling](#)

[Elliot](#)

[Excel](#)

[Kanza](#)

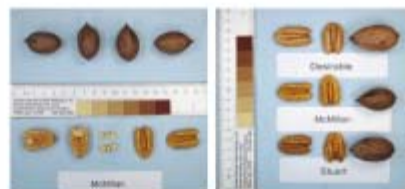
[McMillan](#)

[Sumner](#)

**New cultivars planted in 2004 through 2006 still
being evaluated**

Pecan Breeding: Cultivar Information

McMillan



Average nut quality of test trees 2002-2010.

Cultivar	Yield	# Nuts / lb.	% Kernel	Cluster Size	Harvest date
	lbs./tree/year				(50% shuck split)
McMillan	15.9	51	50%	3.3	Oct. 12
Desirable	11.5	44	53 %	2.5	Oct. 14
Stuart	12.3	48	45 %	2.6	Oct. 23

Average pest resistance of test trees 2002-2010.

Cultivar	Leaf Scab ^Z	Nut Scab ^Y	Black Aphid Damage ^X	Sooty Mold Buildup ^W
	Avg. (worst) ^V	Avg. (worst)	Avg. (worst)	Avg. (worst)
McMillan	1.0 (1.0)	1.0 (1.0)	1.5 (2.2)	1.0 (1.0)
Desirable	2.1 (4.0)	1.9 (4.4)	1.6 (2.7)	1.0 (1.0)
Stuart	1.5 (2.8)	1.2 (3.5)	2.2 (3.8)	1.0 (1.0)

^Z 1=No scab, 2= Few stray spots, 3=Several spots with expanding lesions, 4=Stem scab or defoliation.

^Y 1=No scab, 2=Few stray spots, 3=Obvious scab but no quality loss (0-10%), 4=10-50% shuck coverage, 5=50-100% covered, nut drop.

^X 1=No damage, 2=Light spotting, less than 25% leaves affected, 3=Moderate spotting, 25-75% leaves, 4=Heavy spotting, >75% leaves affected, some leaves completely yellow.

^W 1=None, 2=Light, some black on few leaves, 3=moderate, black on most leaves, 4=Heavy, black flakes on leaves and stems.

^V Average score over all years and average of worst year for each trait.

Average yield (pounds nuts per tree) of test cultivars each year from planting in 2002.

Cultivar	# Trees	1	2	3	4	5	6	7	8	9
McMillan	5	0	0	0	0.8	2.9	17.7	24.3	62.6	35.3
Desirable	6	0	0	0	0.5	2.7	11.4	19.8	20.3	45.3
Stuart	5	0	0	0	0	0.6	7.1	20.0	29.8	53.6

History

Seedling from Baldwin County, Alabama.

Comments

This nut comes to us with a reputation of being a consistent bearer of mid-size nuts with excellent scab resistance. 'McMillan' was planted in our orchards in 2002 and bore its first crop in 2005. So far, we have not observed scab on our trees in a sprayed orchard. This has been a high yielding precocious cultivar with yields approximately double those of 'Desirable'. 2009 was a heavy yielding year, with many limbs bowing down. In the following year yield was lighter, only about half of 2009, but not bad considering the crop size of 2009.

Nut quality is only average, with a thick shell reducing percent kernel to about 50%, and kernel color being a little dark. Nut shucks are distinctive with a rough appearance. While the nut quality is not too exciting, the productiveness and scab resistance of this cultivar suggest it might be a good choice for low input plantings. Right now, I recommend it for trial in high scab pressure or low-spray situations. 'McMillan' is a type II (protogynous) cultivar. In general I think this is a good choice for organic plantings, and low input plantings. Standard commercial groves will probably want a higher quality nut that might demand a higher price.

'McMillan' is a protogynous cultivar with early receptivity and mid to late pollen shed. It would be pollinated by 'Desirable', 'Pawnee', 'Hondan', 'Bryd', 'Arding', and to a lesser extent by 'Cape Fear' and 'Oconee'. 'Arding' would probably be the best choice of a pollinator as this cultivar is also a good choice for low input plantings.

This cultivar was introduced by Auburn University and more information can be found on this selection at the Alabama Pecan Growers Association alpecan.org.



'McMillan' nuts show no scab with fungicide sprays.



'McMillan' nuts, note the rough texture of the shucks.



'McMillan' tree in 2006.



McMillan kernels.

[top](#)

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Pollination Types

Female Flowers
(pistillate)



Protandrous (Type I) –
Pollen produced first.

Protogynous (Type II) –
Stigmas receptive first, then
pollen is produced.

Male Flowers
(catkins)



There are equal numbers of Type I and Type II trees in native groves, ensuring good pollination.



Pollinator Placement

Pecans need cross pollination to set the best crop.

- Pollinators planted no more than 4 rows apart or
- Every 5th tree in every 5th row.

