

## Do the Kanza and Excel pecan cultivars have a place in Georgia orchards?

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In this article I will discuss two cultivars which have drawn some interest from Georgia growers in recent years, 'Kanza' and 'Excel'. The primary reason for interest in both of these cultivars is that they appear to have very high levels of scab resistance. We have tested the 'Kanza' cultivar for over 20 years at our variety test in Tifton, and know quite a lot about the expected performance of this cultivar. 'Excel' is a newer cultivar that we began testing in 2002, and information on the performance of this tree, especially as a mature tree, is lacking. We can, however, discuss what we have seen so far in terms of initial tree growth and nut quality.

Let's start with 'Kanza'. 'Kanza' was released by the USDA breeding program in 1996. It was selected from a cross of 'Major' x 'Shoshoni'. 'Major' is a relatively small nut of good quality that is primarily found in the northern pecan belt. 'Shoshoni' is an older USDA release with strong tree growth that has fallen out of favor in the southeast because of strong alternate bearing with poor quality in the ON year. 'Kanza' was primarily released for the northern pecan belt because of its superior cold hardiness and early harvest date. Dr. Mike Smith reports that 'Kanza' is becoming the most grafted cultivar in Oklahoma (Smith, 2005).

'Kanza' was planted into our test orchards in 1981, and we continued to take data on this cultivar until 2001. Recorded yields of 'Kanza' were similar to other cultivars commonly grown in Georgia orchards such as 'Sumner' (Table 1). Our data indicates that 'Kanza' is not a precocious cultivar, in fact yields were less than one half of the precocious 'Cape Fear'. This is somewhat at odds with what Mike Smith found in Oklahoma where he reports 'Kanza' to be extremely productive as a young tree, producing more than most other cultivars. Two factors might account for these differences. Firstly, 'Kanza' may be more productive in Oklahoma, which is, after all, the region for which it was released to be grown. Secondly, and I believe most likely, 'Kanza' is an early maturing cultivar and depredation by crows may have been severe. This cultivar was tested in a mixed planting and 'Kanza' was one of the first to ripen. I suspect a significant portion of the early crops was removed by these animals, but this period was before my time so I don't have any direct observations. However, yields of young trees especially can be impacted quite a bit by even modest crop removal. I feel confident that early yields of 'Kanza' will be acceptable, especially in comparison to 'Elliot', a cultivar with very low precocity.

Unfortunately mature trees of 'Kanza' quickly go into a severe alternate bearing cycle (Figure 1). However, because of its small nut size, quality remains high during the ON year. In fact, the average percent kernel during years 1-10, when crops were more regular and light was 51.3%, while percent kernel during years 11-20 when trees were alternating was 51.5%. Thus 'Kanza' appears very similar to 'Elliot' in that alternation is severe, but quality remains acceptable even with heavy crops.

Nut form and quality of 'Kanza' are very similar to the cultivar 'Elliot' (Table 2). Both produce small teardrop shaped nuts with normally plump kernels (Figure 2). I think it would be difficult to differentiate one from the other in the marketplace. Reports from Oklahoma indicate that 'Kanza' shells well, and it is developing a loyal following of consumers much as 'Elliot' has here.

Pest resistance of 'Kanza' appears to be very good. We have not observed scab on this cultivar during our testing period, however, it was always in a sprayed orchard. Mike Smith reports no scab on unsprayed 'Kanza' trees in Oklahoma during 2004, which was a very wet year. Results from the Auburn scab tests indicate 'Kanza' has scab resistance levels similar to 'Elliot'. However, we must remember that 'Kanza' is a relatively new cultivar which has not been widely planted in the southeast. It is not known how well it will stand the test of time while 'Elliot' has remained resistant for several decades. Testing in Oklahoma indicates that 'Kanza' has resistance to

powdery mildew, but is susceptible to brown spot. One other factor we have noted in our tests is that the leaves seem to turn yellow and drop early in the fall after harvest. My theory is that this is due to 'Kanza's' northern parentage and the leaves are just shutting down early. Whatever the cause, it may contribute to the alternate bearing tendency of this cultivar.

'Kanza' has late pollen shed and early stigma receptivity, very similar to 'Elliot'. It is unfortunate that they won't pollinate each other since they would have been a natural pair to interplant with each other and harvest as a single crop. Good matches for 'Kanza' pollination include: 'Desirable', 'Pawnee', 'Cape Fear', 'Caddo', and 'Oconee'.

Given its small nut size, I believe the primary usefulness of 'Kanza' in our region is probably as a substitute for 'Elliot'. I believe 'Kanza' will likely out-produce 'Elliot' as a young tree. Mature tree yields are difficult to compare because our 'Elliot' trees are very old, but may be similar since both set heavy crops and alternate in production. Both cultivars are severe alternate bearers with good quality in the ON year. Both cultivars also have an early maturity, but 'Kanza' should ripen a few to several days before 'Elliot'. Nut form and quality of these two cultivars is very similar and would probably be indistinguishable in the marketplace. The only thing I have noticed is that 'Kanza' at times seems to have darker golden kernel color, and a slightly more elongated nut. Scab resistance is very good in both cultivars, but 'Kanza' has not been existed nearly as long as 'Elliot' and may not hold up as well as 'Elliot' in the long run. 'Kanza' is very cold-hardy, and well adapted for northern regions, while 'Elliot' is very susceptible to spring freeze damage. Right now we are recommending 'Kanza' in northern Georgia and areas where freeze damage on 'Elliot' might be a concern. Given its similarity to 'Elliot', and probable advantages over 'Elliot' in terms of precocity and harvest date, we also recommend 'Kanza' for trial in the south where high levels of scab resistance are needed.

The second cultivar I want to discuss is the 'Excel' cultivar. This cultivar has recently garnered much attention in Georgia, primarily driven by the search for a large-sized nut with high levels of scab resistance. Unfortunately, right now this cultivar is so new that many important questions about its suitability remain unanswered. I will attempt to tell you what we do know.

The Excel cultivar originated as a chance seedling on the homestead of Mr. Andy Clough near Blackshear Georgia. In recent years this seedling has been patented and sold out of a nursery by Mr. Clough and his son Chris. The original tree is approximately 30 years old, and the Clough's speculate that the parents of this seedling are 'Success' and 'Pierce'. 'Success' is a well-known older cultivar with a large roundish nut with a thin shell. It is not much grown anymore because it has problems with severe alternate bearing and scab susceptibility. Interestingly, 'Success' is a parent of many well-known cultivars including 'Desirable' and 'Forkert'. The 'Pierce' cultivar is a selection from this orchard with a relatively small nut size and an early harvest date which has not been commercially propagated.

What you think of the nut quality of 'Excel' may depend upon whether you are a glass half-full or glass half-empty kind of person. Let's look at the good side first. Nut size is large, at 50 nuts per pound (Table 3) with both nut and kernel size being similar to 'Desirable' (Figure 3). The kernel is among the brightest that I have seen, and it appears to hold its color well during storage. Harvest date is early, last year we harvested them on October 9th. On the less favorable side, percent kernel last year was only 48%, and this was on young trees with a small crop. Excel nuts have a very thick shell, similar to 'Gloria Grande', so I doubt is percent kernel will ever eclipse 50% and this is simply too low for some growers. I have not had enough of a crop to test the shelling ability of this cultivar, but Mr. Clough reports that it shells well.

Cluster size on 'Excel' seems to be very large, and in combination with its large nut size, this suggests nut filling may be a problem in mature trees with a heavy crop. One vital piece of knowledge we need for this cultivar is: Can we thin the trees with summer shaking? The tree seems to have relatively thin branches, giving a somewhat weepy look to the tree. With this

growth habit, I am concerned that it may be difficult to get enough force out to the terminals to remove green nuts.

Another factor I have noticed about this cultivar is that it has relatively sparse foliage. This may improve spray penetration and lessen wind damage, but there is also less leaf area for photosynthesis. Grafting of this cultivar is somewhat difficult and I have had much lower percentage of takes with this cultivar. 'Excel' has not been a fast grower nor have early yields been large in our test. Excel is receptive to pollen mid-season and sheds pollen late. Good pollination matches for Excel include: 'Desirable', 'Pawnee', and 'Cape Fear'.

The main excitement centered around 'Excel' is that so far it is immune to scab. I have seen a large number of unsprayed trees in the Clough orchard with no scab infection while nearby 'Cape Fear' trees were devastated. No scab was seen on our Excel trees in Tifton during the years 2003-2005, when other cultivars were severely impacted. Right now there are no other cultivars which combine the large size, early harvest, and scab immunity of Excel. Given the rainy years we have had in the recent past, it is not surprising this cultivar has drawn a lot of interest. I always caution growers, however, that scab resistance is usually transitory, and it is impossible to predict when the scab fungus will overcome the resistance of a cultivar. It is always important to consider what the value of the cultivar will be if this happens.

In summary, 'Excel' appears to be a pecan with a very mixed bag of attributes. Without its scab immunity, I don't think this cultivar would receive a second look from most growers, it just has too low of a percent kernel and threatens to have an overloading problem as well. However, right now it is immune to scab, its large, its fairly attractive in kernel appearance, and we have just had some devastating years of scab damage. What I like this pecan for is to diversify an operation. I would not plant it as a main cultivar because I am not convinced you will be able to get consistent quality from a mature tree. It reminds me of 'Gloria Grande', a cultivar that can look good some years, but has quality troubles in many years. However, it might be good to have a block of low-input cultivars that don't need many sprays and can allow you to concentrate on spraying your higher quality susceptible cultivars and provide stability in wet years. It would also be a good choice for low or wet areas of orchards where scab pressure is higher. Right now we are officially recommending this cultivar for trial and are following it closely in our tests. However, given the large number of trees that have been planted in the last two years of this cultivar, word of mouth among growers will surely determine the ultimate success of this cultivar.

**Literature Cited:**

Smith, Mike. 2005. Notes on 'Kanza'. The Oklahoma Pecan Grower. Jan., Feb., March 2005. Page 3-4.

**Table 1. Average yield of 'Kanza' and check cultivars in Tift Co., Ga. 1981-2001.**

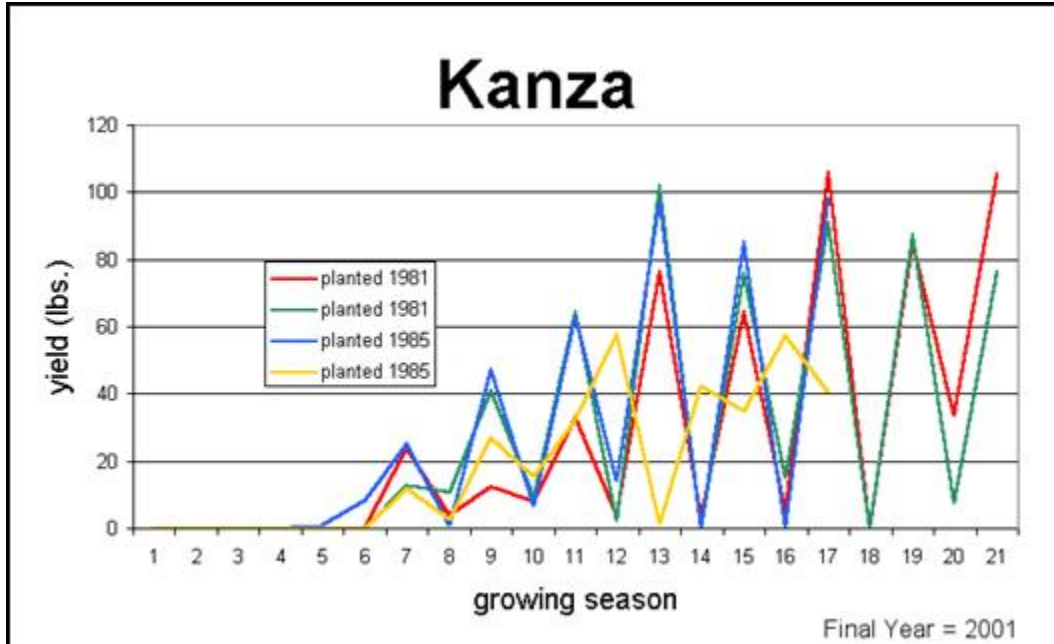
Cultivar	Average Yield	
	Years 1-10	Years 11-20
Kanza	7	42
Cape Fear	17	59
Kiowa	12	47
Sumner	9	46
Pawnee	8	48

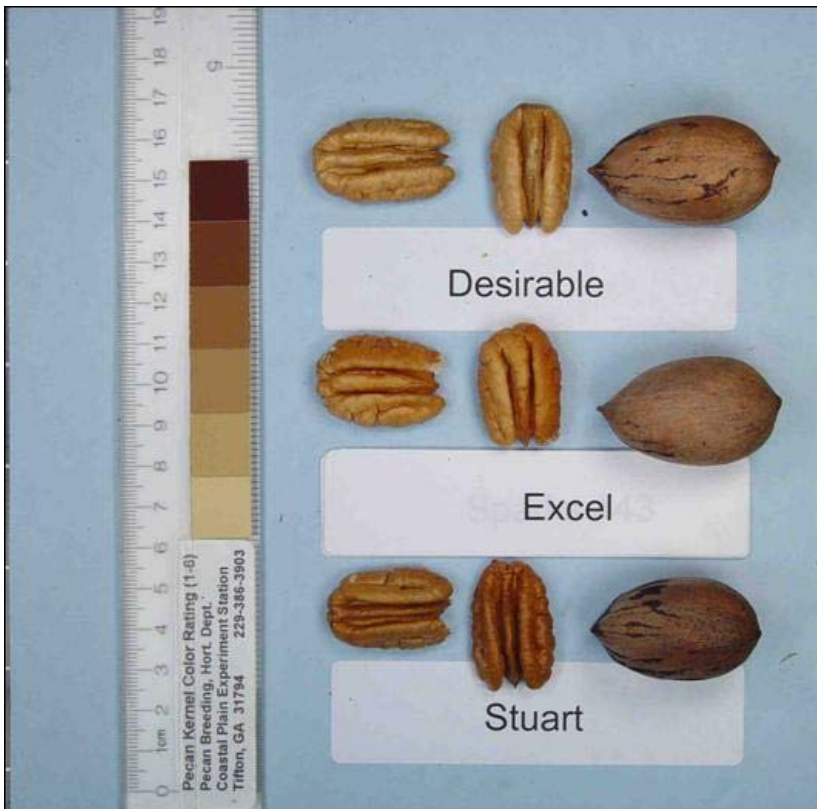
**Table 2. Nut quality of 'Kanza' and 'Elliot'.**

	Nuts / lb.	% Kernel	Maturity
Kanza	74	52	Oct. 8
Elliot	77	51	Oct. 12

**Table 3. Nut quality of 'Excel' in Tifton in 2005.**

	Nuts / lb.	% Kernel	Maturity
Excel	50	48	Oct. 9





**Figure 3.** Comparison of 'Excel', 'Desirable', and 'Stuart' pecans.