

Preface

This story is a description of my trials and tribulations of learning "**How to grow Pecans in France**".

However, I feel that it is necessary to describe how a nuclear physicist (me) learned to grow pecans in the first place. So this monograph is divided into two parts, with a possible surprise lecture at the end.

Preface

The **First Part** describes how I became interested in growing pecans in **Luling, Texas**.

Much of the story has to do with me becoming a pilot, and flying from **Los Alamos, NM**, to **Luling, TX** at **Xmas**, to visit my wife's relatives.

Preface

The **Second Part** describes what motivated me (after Julie and I moved to France in 1999-2000) to challenge the "**French Bureaucracy**" and get permission to import and grow grafted pecans in southern France.

Part 1

How a Nuclear Physicist got into the Pecan business

R. M. Kiehn
University of Houston
www.cartan.pair.com

A bit of history

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You should know a little bit about me, for it is a bit weird to think that I would ever wind up growing pecans in southern France. I grew up in the ethnic Polish-German part of South Chicago, went to public schools, but was only 8 years old when I entered 5th grade, after moving to Elmhurst, IL.

A bit of history

You should know a little bit about me, for it is a bit weird to think that I would ever wind up growing pecans in southern France. I grew up in the ethnic Polish-German part of South Chicago, went to public schools, but was only 8 years old when I entered 5th grade, after moving to Elmhurst, IL.

From High School in Elmhurst, I went to MIT (1946) at the age of 16, which is a story in itself. I graduated from MIT with a Ph.D in physics, 1953.



Pecan Turtles

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Pecan trees are not too common in the ethnic areas of Chicago, so why should pecan turtles have anything to do with growing pecan trees in southern France?

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I do not remember when Ma learned how to make chocolate-caramel Pecan turtle candies, but I learned what a Pecan was from these candies (patented in 1923). Little did I know, then, how much the Pecan was to interact with my life.



Los Alamos Scientific Laboratory, age 23

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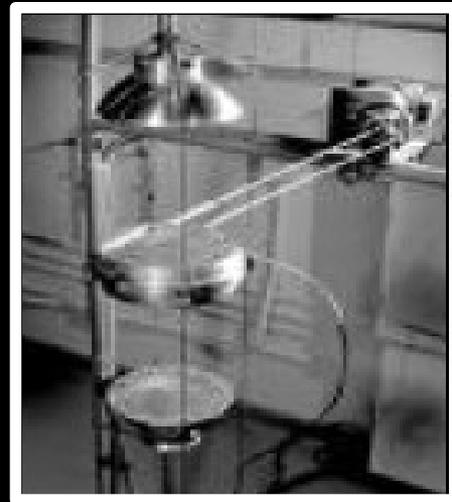
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Amongst other things, I had a dream of building a nuclear powered rocket ship, or a power plant for interstellar flight, using plutonium. Los Alamos was the only place you could get sizable quantities of plutonium to play with.

Jezebel, a Pu239 →
critical assembly



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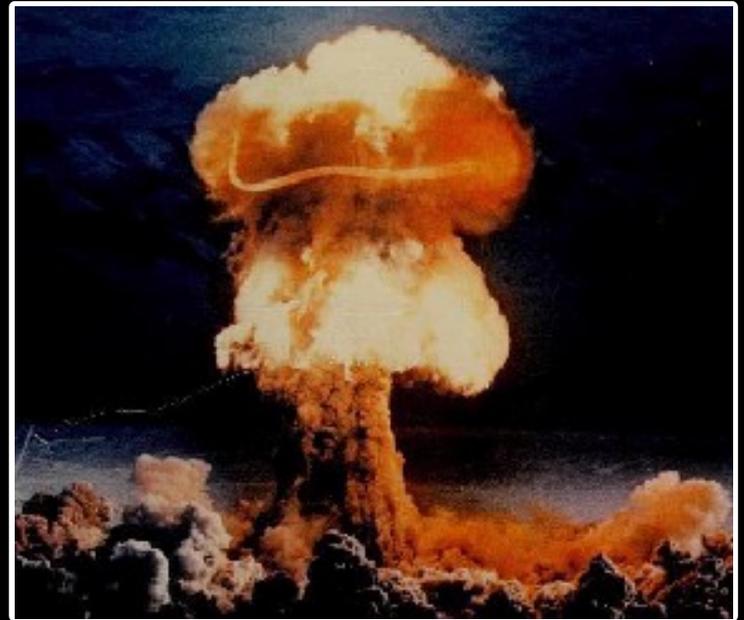
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- 6. and Experience with
Nuclear explosion(s)
in Nevada, 1957, and the
Pacific, 1962.**



The Flying Farmer-Physicist, 1957-1963



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At Xmas time, I would fly the family from Los Alamos, NM to Luling, TX in my new Cessna.



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In 1960 I became a Texas farmer for a number of reasons. I searched for and purchased a native pecan bottom on the San Marcos River. I cleared the land of brush and junk trees with a bull-dozer. Then I laid out a pecan orchard and planted - in stages - small grafted pecan trees, (3 ft tops & 3 ft roots) during the Xmas holidays. The grafted trees were purchased from

The Womack nursery near DeLeon, TX

The Flying Farmer-Professor, 1963-1980



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I would fly from Luling to Houston leaving early on Tuesday mornings, teach classes on Tuesday through Thursday, and then fly back to Luling from Houston Thursday evenings. My classwork assignments were limited to three days in Houston. I also held night time lectures on astronomy, and attended wine tasting every Wednesday night at Josephs wine bar in Houston.

The Luling Pecan Orchard 50 years later.

About 1050 trees are on an 80 acre peninsula in the horse shoe bend of the San Marcos river.

The trees are planted on hexagons, not squares.

Irrigation Water came from the San Marcos river.

I was told the peninsula was used to herd cattle on the Chisolm trail by roping off the narrow neck.



Things I learned from the Luling Orchard .

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Low nut yield of high quality year 2... etc.

It takes 10 years + to get a decent pecan crop.

Part 2

How to legally import and grow pecan trees in France.

R. M. Kiehn
University of Houston
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**In 1999 Julie and I decided
to move to France.**

**We rebuilt an old Bastide-Villa near Mazan
at the base of Mont Ventoux,
and about 20 klicks from Avignon.**





For other photos of our villa see
www.22.pair.com/esdc/arw/property.html



**Scene from dining
room window**















It became apparent that the climate, soil, and sub-irrigation in the Vaucluse was perfect for Pecan trees.

Then I became aware of:

The French Aversion to Imported Plants

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So the great wines of France, such as Cabernet Sauvignon and Bergundy, are actually “parasites” growing on American Roots.

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In effect, the French Government stepped in and said “No more imports of plants”. Later (1946) INRA was established, and imports of plants and trees were permitted but only after very severe inspections and tests were conducted by the scientists at INRA. **INRA is short for the French National Institute for Agricultural Research .**

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So it became necessary to find another method to import grafted Pecan trees, of several different varieties, in order to decide which would be the best choices for the **Vaucluse**.

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I knew there were 3 or 4 pecan trees near Isle-sur-la-Sorgue. The trees were grown from nuts planted in the ground by an INRA scientist (my friend) who liked Pecan Pie.

I came across a few other places where trees had been started from nuts. Such progeny do not produce the large nuts of grafted hybrid pecans.

Although walnut orchards in Europe and the mid-east have been known for thousands of years, to the best of my knowledge, there did not exist orchards of hybrid pecan trees in France (before my orchard).

On a trip to the Bergerac area I noticed on the side of the road 4 pecan trees that looked like they were hybrid pecan trees (they were not walnut trees). How they got there is a mystery.

The photos below these 4 trees some 10 to 12 years later.



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Pecan Pie for Patrick

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3. The **USDA** chief put me in touch the **Chief of INRA** in Paris, (I shall call her, Chief Dianne.).

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3. The USDA chief put me in touch the Chief of INRA in Paris, (I shall call her, Chief Dianne.).
4. **Chief Dianne explained to me that I had to find a professor in the USA that could read and write French, who would go to the Nursery and inspect the roots and packaging, write two copies of the results of his inspections in both languages, and attach them with the shipment !!!**

Then a number of events took place.

5. A few phone calls from France to the USA, and I found a professor at TAMU that could speak and write French. He was an expert in the study of root diseases, but even more. He also knew the Womack Nursery, and its people, in Brownwood TX. This was the same nursery from which I bought the grafted root stock for my Orchard near Luling on the San Marcos river in 1960.

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6. The next step was to find a small parcel of land nearby our Villa -- a parcel with good sub-irrigation from the Alps. I located and purchased a small piece of sandy land with a water table about 6 to 10 feet deep. Perfect for pecans and about ½ kilometer from house.



Pecan Orchard
near Mazan, Fr.

Chez Kiehn

Then a number of events took place.

7. An order was placed with the Womack Nursery. The inspections were made. The sealed package of 30 grafted trees (3ft roots & 3ft tops) was sent via Lufthansa supposedly from Dallas direct to Marseille. Patrick wanted 10 trees and I wanted 20.

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8. The holes were prepared for the arrival of the Pecan trees. The holes were 1.5 across, and 3 feet deep.



Holes for Pecan trees
3/12/2003

Then a couple of disasters took place.

8. The shipment was **lost. It went to Germany first, not to Marseille; then to Lyon, and then finally to Marseille, several days late.**

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9. After receiving notification of arrival, my INRA friend, Patrick, and I went to Marseille Airport to pick up the trees. We had to pay import fees. I asked the Duane what do we do now? The Duane said “You are free to go – pick up your parcel at Gate X” **He did not say a word about root INSPECTIONS ???** Patrick and I **and the trees** got the Hell out of Dodge, and arrived back in Mazan in the late afternoon.

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10. The Marseille INRA agent “**B**” goes berserk !! By telephone to Mazan she tells me that she had decided to do an inspection in Marseille. I mentioned that her boss , INRA “Chief Dianne”, told me that a secondary inspection upon arrival was not necessary, if the root inspection had been certifide the TAMU professor in the US, and the Parcel was sealed. Agent B **gasped** when she realized that I had contacts at the highest level.

We compromised. The unopened shipment of trees was taken to the regional INRA station, and Patrick got two of his colleagues to perform the root inspection.

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We returned to Mazan and the trees were planted before nightfall.

**Seedlings sprouting
2 months after planting
Photo 5/06/2003
Green plastic Rabitt guards**





First season - photo 10/06/2003
10 months after planting
Only 1 tree did not sprout

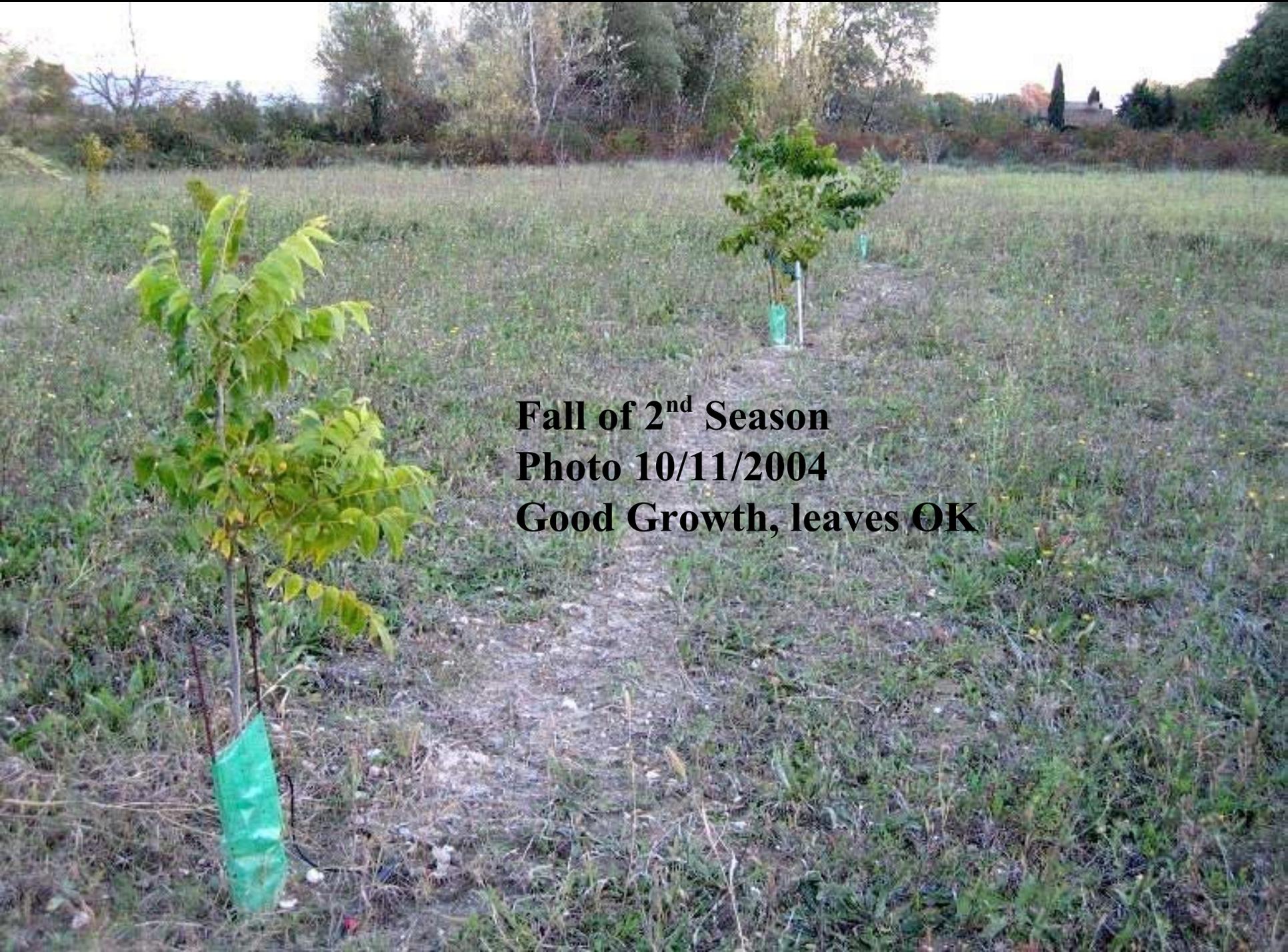
Only 1 tree did not sprout

The tree did not die, but
Sprouted **below** the **graft**.



12/09/2005





Fall of 2nd Season
Photo 10/11/2004
Good Growth, leaves OK



Third Season 09/12/2005

**Burkett Pecan
Shows excellent
third year growth
(so did I).**

Photo 9/12/2005



**Choctaw Pecans 4th season
Photo late summer 2006**

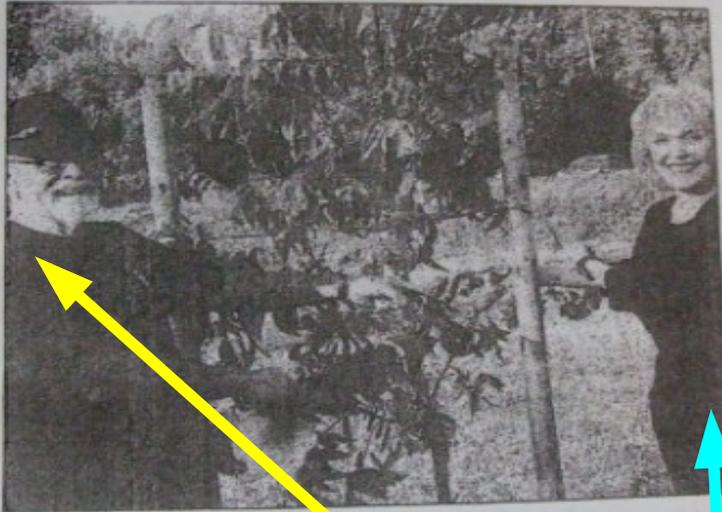


LA BELLE HISTOIRE... Novatrice, une plantation de pacaniers donne sa première production à Mazan

Il était une fois... deux noix

Robert et Julann Kehn sont citoyens américains. Ils sont venus il y a quelques années en vacances en Provence. Ils s'y sont tellement plu qu'ils y ont d'abord loué une maison. Et puis, grande décision, ils ont quitté Houston (Texas) pour s'installer à Mazan, dans le Comtat Venaissin. Ils ont acheté une maison dans le quartier des Garrigues d'où ils voient le Mont Ventoux. Mais Robert avait la passion de l'arboriculture.

Et voyant le climat et la lumière qui régnaient dans sa nouvelle région, il était persuadé que des pacaniers pourraient y pousser - ces arbres qui produisent les noix de pécan, délicieuses en apéritifs et aussi en garniture de tartes sucrées. Semer des noix dans un terrain et attendre qu'elles germent serait trop long : Robert préféra importer, avec l'accord de l'Inra et avec tous les documents douaniers nécessaires, des jeunes plants, une quinzaine environ, qu'il installa, sur un terrain assez humide, en 2000.



Au début du mois, Robert et Julann ont découvert les deux premières noix de pécan
soins nécessaires notamment ...

deux premières noix de pécan sur un des arbres, les premières sur le sol français semble-t-il... A Mazan on cultive avec bonheur abricotiers et cerisiers, la vigne y est prospère. Peut-être que dans quelques années on y récoltera ces fameuses noix de pécan dans des arbres qui auront prospéré (ils sont de la même famille que nos noyers français). On les transformera en de délicieuses pâtisseries gourmandes, on demandera une AOC....

On peut toujours espérer et rêver !

Gérard SIBONI

CETTE RUBRIQUE EST LA VÔTRE
Vous souhaitez que nos rédacteurs reviennent sur une actualité passée, vous souhaitez que nous abordions un sujet qui vous intéresse, vous avez connaissance d'une belle histoire : dites-le nous, nous en parlerons.
Par courrier : Vaucluse-Matin, rubrique "Vous et Nous", 17 av. De la République, BP 134, 84 007 Avignon.

Once upon time ... (there were) Two Nuts.

15/10/2006



French Pecan Orchard gets writeup in Houston Chronicle

Des noix de pécan produites à Mazan

On connaît l'olive de Nyons, le calisson d'Aix, les berlingots de Carpentras... maintenant on va peut-être parler de la noix de pécan de Mazan.

Julianne et Robert Kiehn, originaire de Houston au Texas et installés à Mazan depuis cinq ans, ont en effet eu l'envie de tenter l'expérience de planter des pacaniers sur un terrain en contre-bas du quartier Saint-Donat.

Ils ont planté une quinzaine d'arbres de variétés différentes et viennent de présenter leurs deux premières noix de pécan (appelée aussi "pacanes").

Tout comme le noyer, le pacanier fait partie de la famille des juglandacées. Il fournit des fruits en octobre, a besoin d'humidité et son fruit est également enveloppé dans une coquille mais beaucoup plus fine, puisqu'on peut ouvrir la pacane avec ses doigts.

Des fruits qu'on ramasse parfois comme les noix, les olives ou les cerises, tout simplement en secouant l'arbre. Côté goût, la noix de pécan a une saveur plus subtile que le fruit du



Robert et Julianne Kiehn nous présentent la première noix de pécan récoltée dans leur verger.

Photo S.L.

noyer. Aux Etats-Unis, elle est utilisée comme biscuit apéritif, sucré ou salé ; on en fait des tartes et d'autres douceurs comme les fameux chocolats en forme de tortue.

Pour Julianne et Robert, c'est la passion qui les a guidés dans cette démarche. Ils n'ont pas l'intention d'en faire une grosse production, juste une récolte locale, nouvelle pour la région. Leur plantation n'a que quel-

ques années, mais on sait que le pacanier commence à donner beaucoup de fruits qu'au bout de cinq ans.

La municipalité a accueilli cette nouvelle production avec intérêt. La motivation de ce charmant couple américain à la retraite a su séduire le village et chacun souhaite bientôt voir s'installer la noix de pécan dans tous les apéritifs, à côté des olives ou des cacahuètes.

5/13/2010



07/20/2010

**Pawnee Nutlets
set a good crop**





06/14/2012



06/14/2012

06/14/2012



06/14/2012



06/14/2012



Costs of importing Pecan trees

**Womacks Nursery 30 trees
(includes TAMU inspection) \$436.52**

Shipping (Lufthansa) \$299.38

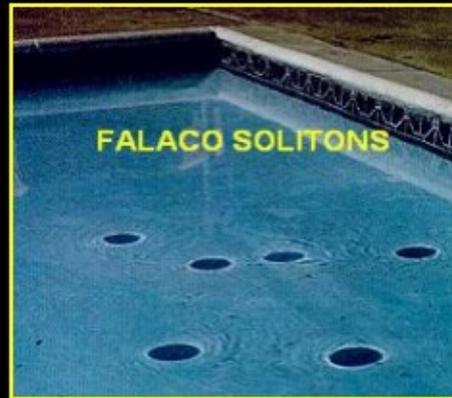
Duane(Customs) \$198.51

\$934.41

**About \$31 per tree,
neglecting many hours of getting things done.**

Cartan's Corner

"There are more things in heaven and earth, Horatio,
than are dreamt of in your philosophy"
Hamlet Act 1, Scene 5



ADVENTURES IN APPLIED TOPOLOGY

*Cartan's methods of exterior differential forms are applied to a variety of physical problems.
Cartan's Corner originated from the Un. of Houston, 1987- 1998; from Mazan, France, (in the Vaucluse) 1999-2010;
and now has move to Sun City in Texas, near Austin*

The photo displays Falaco Solitons as topological defects in a fluid. **Click on the photo for more details**
The phenomena depicts a global topological stabilization process that is replicated on all scales
-- from the micro scales of confined quarks to cosmological scales of globally stabilized galaxies.

For more info see

<http://www.cartan.pair.com>

For other photos of our villa see

<http://www22.pair.com/csdc/arw/property.html>

Houston Chronicle Article see

<http://www.chron.com/life/food/article/Houstonian-follows-pecan-dream-to-France-1886985.php>

Part 3

How to survive a terrorist

Nuclear Explosion.

R. M. Kiehn
University of Houston
www.cartan.pair.com

New Model Terrorist

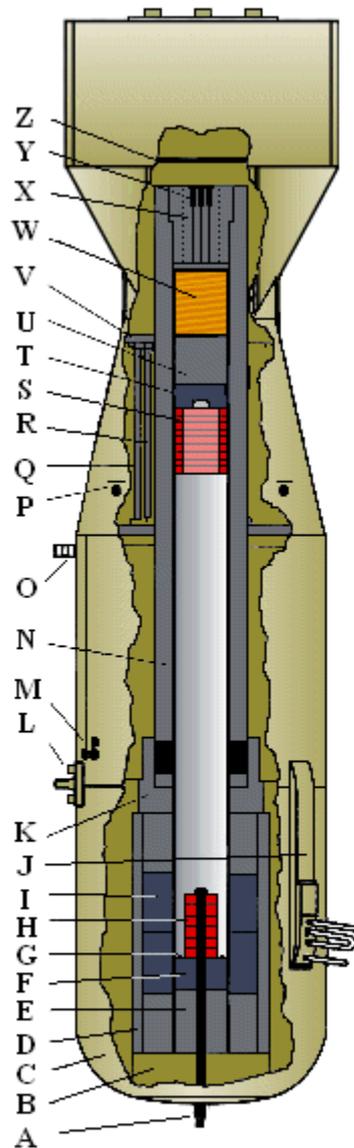


**“Fat Man”
Nagasaki
Bomb 2
Plutonium**



**“Little Boy”
Hiroshima
Bomb 1
64 Kg U235**



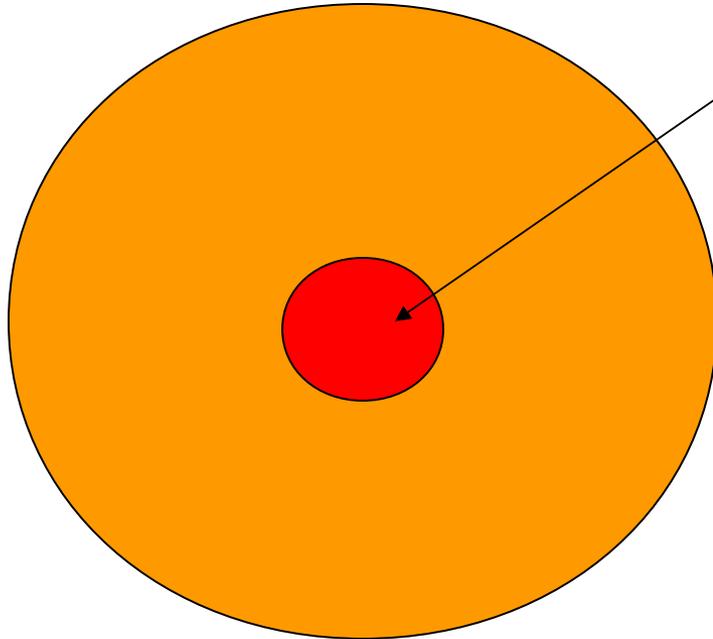


Cross-section drawing of Y-1852 Little Boy showing major mechanical component placement. Drawing is shown to scale. Numbers in () indicate quantity of identical components. Not shown are the APS-13 radar units, clock box with pullout wires, baro switches and tubing, batteries, and electrical wiring. (John Coster-Mullen)

- Z) Armor Plate
- Y) Mark XV electric gun primers (3)
- X) Gun breech with removable inner plug
- W) Cordite powder bags (4)
- V) Gun tube reinforcing sleeve
- U) Projectile steel back
- T) Projectile Tungsten-Carbide disk
- S) U-235 projectile rings (9)
- R) Alignment rod (3)
- Q) Armored tube containing primer wiring (3)
- P) Baro ports (8)
- O) Electrical plugs (3)
- N) 6.5" bore gun tube
- M) Safing/arming plugs (3)
- L) Lift lug
- K) Target case gun tube adapter
- J) Yagi antenna assembly (4)
- I) Four-section 13" diameter Tungsten-Carbide tamper cylinder sleeve
- H) U-235 target rings (6)
- G) Polonium-Beryllium initiators (4)
- F) Tungsten-Carbide tamper plug
- E) Impact absorbing anvil
- D) K-46 steel target liner sleeve
- C) Target case forging
- B) 15" diameter steel nose plug forging
- A) Front nose locknut attached to 1" diameter main steel rod holding target components

"Atom Bombs: The Top Secret Inside Story of Little Boy and Fat Man," 2003, p 112.
John Coster-Mullen drawing used with permission

The Critical Zones of a Nuclear Detonation



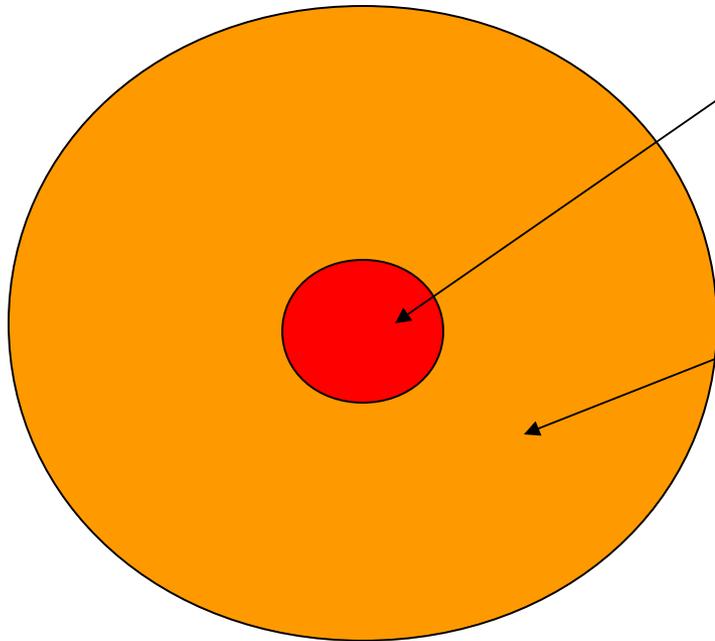
FireBall: Zone 1

Up to a few hundred feet for A bombs

Up to a few miles for big H bombs

Essentially No chance of Survival

The Critical Zones of a Nuclear Detonation



FireBall: Zone 1

Up to a few hundred feet for A bombs

Up to a few miles for big H bombs

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Thermal Radiation & Blast: Zone 2

2000 to 10000 feet -- A bomb

10 to 25 miles -- big H bomb

Survival is possible; your chances are better at larger distances from ground zero.

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Up to a few miles for big H bombs

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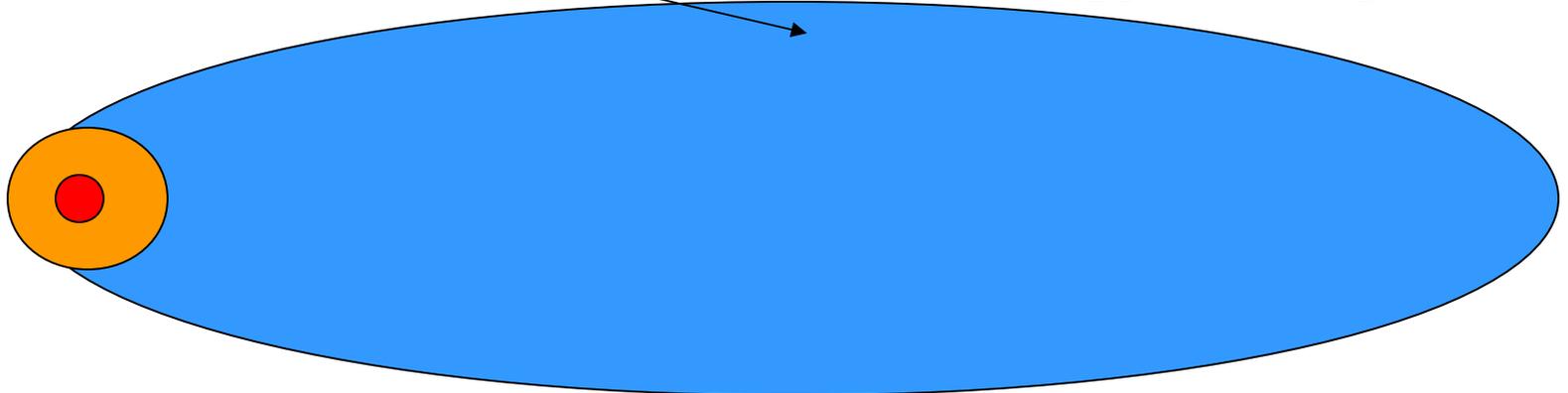
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Anvil Top of Mushroom Cloud

Upper Atmosphere winds



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Anvil Top of Mushroom Cloud



Upper Atmosphere winds

Radioactive Fallout: **Zone 3**

Up to hundreds of miles downwind.

Survival chances are excellent if you are prepared and know what to do.

**If you have not been vaporized by the
fireball, you have a good chance of
surviving --**

If you know what to do.

The critical times for survival are:

The first few seconds; the first few minutes; the first few hours.

HEAT radiation

BLAST & fire

Radioactive Fallout

If you were in the Zone 1, the FireBall, you have been vaporized.

**If you experience, or sense,
intense HEAT, and
a very bright FLASH of LIGHT,
but NO NOISE,
(the noise will come many seconds later)**

CONGRADULATIONS,
you are in Zone II
and you have survived (so far).

**Further Survival can depend on what you do
during the next few seconds (critical time 1).**

Survival Step 1: The first seconds.

DO NOT LOOK, DUCK for cover **IMMEDIATELY.**

Train yourself such that if you sense intense heat and a bright flash with no noise,

DO NOT TURN TO LOOK at the FLASH,

You can burn your retinas and become BLIND. (Bummer)

DUCK BEHIND OR GET UNDER COVER IMMEDIATELY .

Use anything or anywhere that will shield you from the intense thermal radiation (Brighter than a 1000 suns) and blast. The faster you get under cover, the less burn you will receive.

Survival Step 2: The first few minutes.

DUCK - STAY DOWN. Let the Shock wave pass.

In Zone II, there will be immediate intense thermal radiation (that can last for up to 30 seconds for a big H bomb), followed by a Shock wave.

STAY DOWN under your emergency shield, or cover, for at least **A FEW MINUTES**. Let the **SHOCK WAVE** pass over you. You will sense the Shock from the Noise and, possibly, three Pressure pulses (out - in - out).

Your emergency cover could be a ditch, a culvert, behind a stone wall, a basement, a building, your car, anything that will block the intense Thermal Radiation (not glass) and protect you from flying debris.

Survival Step 3: The first few hours.

FIND A SUITABLE FALLOUT SHELTER.

After the shock wave has passed by, depending on your proximity to ground zero, you may have to worry about immediate threats due to fires and collapsing structures.

Your next largest problem is lethal nuclear radiation from late time **Radioactive Fallout.**

Within a few minutes the fireball will generate a Mushroom Cloud, taking radioactive debris and vapor up to the top of the atmosphere.

- Fortunately, the **Fallout** from the Mushroom Cloud can take many minutes to many hours before it reaches the ground, giving you time to go to or to find suitable shelter.

The **Radioactive** Fallout Problem¹

In a matter of (say) 10 to 15 minutes, small metallic or solid spheres made radioactive by neutron irradiation will fall from the mushroom cloud much like hail. The more intense radioactive fission product fallout will come down somewhat later as dust or powdery flakes. Downwind, the fallout may take several hours before it arrives on the ground.

The first thing to do is to look at the anvil top of the mushroom cloud. If it is pointing at you, you need to act fast, and get to a shelter, or get out of the way of the oncoming fallout, if possible.

If the anvil top is not pointing at you, then you have more time to assess the threat of fallout to you, and/or find a suitable fallout shelter.

Remember 3 feet of dirt, 1 foot of concrete, will shield the radioactive flux by a factor of 10. The more shielding, the better. Deep basements, caves, even culverts under a road can be useful fallout shelters. You should plan to stay in the best emergency shelter you can find for about 2 days minimum, and then get to a better shelter for 2 weeks or more.

The **Radioactive** Fallout Problem²

Initially the radioactivity is very intense, but it will decay by a factor of 10 about every factor of 7 in time. Hence a radiation level of 1,000,000 units /hr will decrease to 1 unit/hr in about 2 weeks.

If you absorb more than 400 units, your life to death survival ratio is about 50 %. The best thing to have is a radiation detector, so that you can measure the local radioactivity level, but of course most people do not own such devices. You will have to rely on your local civil defense teams and announcements received on your battery powered radio.

You will need water. Bottled water and canned goods are not effected by nuclear radiation. Fallout will not make you radioactive, unless you eat it. Try to stay in your fallout shelter for a few days at minimum. Then you can venture outside for a few quick minutes to answer calls of nature. You will absorb some radiation, but not enough to kill you.

The radiation will continue to decay, hopefully down to levels that are livable.

1.2 Why did an ethnic Pollock kid go to MIT?

During WWII, my Ma worked at the Douglas war plant (now O'Hare field), where she worked as "a **Rosie the riveter**" type", making DC-4,s.

She asked her boss where she should send me to become an aeronautical engineer.

. He said

"MIT was a pretty good school" (!)

Ma came home that night, wopped me along the back of my head as usual, and said:
"You are going to MIT after high school".



I said **"Yes, Ma"**.

Preface

The **First Part** describes how I became interested in growing pecans in **Luling, Texas**. Much of the story has to do with me becoming a pilot, and flying from Los Alamos to Luling, TX at Xmas, to visit my wife's relatives.

It turns out that a part-time farmer can deduct, as expenses, travel to and from the farm, as well as the depreciation of an airplane.

Texas farmers also get subsidies for clearing brush and planting hardwood tree; 50 cents on the dollar.

1.4 MIT admits an ethnic kid, age 16, without an entrance exam

Ma gave me a cardboard suit case. When my underwear got dirty, I was instructed to mail it back home in the cardboard suitcase. Then she would wash the underwear, and send it back to Boston. With these, and other instructions, she put me on the train to Boston, age 16.

1.4 MIT admits an ethnic kid, age 16, without an entrance exam

I arrived at MIT to become part of a madhouse of mostly returning GI,s all wanting to enroll at MIT on the GI bill. Swamped MIT officials told us only 1 out of 3 applicants would make it through the first year.

It was then I learned that I should have taken an
entrance exam!!!

(To overcome this **disaster** I had to butter up the secretaries.)

1.5 Early Government Work, age 19

I got a Q clearance, and spent the summer of 1949 working at the Argonne National Laboratory on the control system of the Nautilus, the first Nuclear Powered Submarine.

(and received my **first patent** for an AC ionization chamber.)

