The Old Texas Rose

Volume XV FALL 1994 Number 2

15TH ANNUAL ROSE RUSTLE TO BE OCTOBER 22ND

WE WILL VISIT ROSE RESEARCH TEST GARDENS OF A & M

Dr. David H. Byrne, Chairman of the A&M Rose Research Program, has invited the Rose Rustlers to visit the Rose Gardens containing some of the plants that are being used. Dr. Robert Basye is also extending the invitation as he is the originator of the Endowed Chair and is working in the program. The Old Texas Rose carried an article about Dr. Basye in 1993 Fall issue, Volume XII No. 2.

You are asked not to take any cuttings of the experimental plants, or any other plants on the A&M properties.

Our Rose Rustle agenda has changed from what we originally practiced as the result of too many participants greedily destroying rose plants in gardens visited. Many roses were trampled, also. New participants learning about old roses did not understand that only two or three small pieces of the bush is all necessary to use to get a cutting with roots. It has worked best to exchange cuttings the way we now are doing.

Please do not help yourself to any of the A&M research properties. If they have any that we may have they will be distributed by the A & M staff. We hope our nice manners will earn us a return invitation some day soon.

PEACEABLE KINGDOM SCHOOL OUR GATHERING SITE 9 AM - 1 PM

Meeting at Peaceable Kingdom School proved so delightful for them as well as us last year that we are accepting their invitation and "do it again."

Bring your rose cuttings in separate seal-top plastic bags (with a piece of wet paper towel inside) containing your cuttings and with their name on the outside on a water proof label with waterproof markers. We had right at 100 varieties of cuttings last year and **we hope to have more this year!** Please bring the best variety of rose cuttings you can! Also, remember it is hoped you will bring cuttings to exchange, a rooted rose in a container, a quart of willow tea, gift plant labels, or something to exchange for the generous gifts of others that will be free for you to select. No one has to be a member to participate. We welcome anyone who is interested in preserving our old rose heritages. We are glad to share.

Remember to bring a small cooler to put your cuttings in after you choose them. It will keep them viable while you travel in your hot car - your air conditioner won't be on while you are parked, and it wouldn't keep them cool enough if it were!

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TRADERS' CORNER

LUCILLE IDOM - (713)453-1274
Would like plants or cuttings of any of the Griffith Buck roses - If you can help her find them call &/or bring them to the Rustle.

MARION BRANDES, Jr. - (713)324-1457
Would like cuttings of:
R. rubrifolia (**R. glauca**, offical name) pink
R. sericea pteracantha, single white flower; red, wide thorns (prickles)
Pearl Drift, 1980 (Mermaid x New Dawn) Shrub
Frau Dagmar Hartopp, 1914, pink, single, HRug,crinkled foliage, low growing

BOBBIE McKENNA -(713)682-4365
Would like to exchange cuttings from her large collection of old roses for cuttings of:
Climbing Etoile de Holland
Guinée, Climbing Hybrid Tea, dark red 1938.
Setina, Climbing sport of Hermosa, Pink.
Cocktail, Semi climbing shrub, 5 petals of geranium red with yellow bases (red blend)
Susan Louise, 1929 shrub, light pink
Climbing Iceberg
Darlow's Enigma
Lanvin
Mothersday, 1949 Polyantha, dark red blooms in in clusters to 20, dwarf growth, good potted.

GEORGIA TORREY DRENNAN'S EVERBLOOMING ROSES 1912

Many members have been following the chapters printed in this newsletter from EVERBLOOMING ROSES. We will resume printing chapters as soon as time and space permits in the coming newsletters. There are probably enough chapters to carry us through next year.

We are glad so many are enjoying this series and we probably have some other books of interest that we can draw from later. John Parkman's "Book of Roses" is a likely candidate - 1866. But we will consider later.

We would like to have your ideas on what you would like to read in future issues of THE OLD TEXAS ROSE newsletter.

REMEMBER LUNCH!!!

You aren't likely to forget your cuttings and rooted roses and zip-loc bags and willow water **AND DRINKING WATER** to bring with you to the Rose Rustle but please, please
REMEMBER TO BRING YOUR LUNCH
Some of the members may have made the necessary arrangements with Peaceable Kingdom to have lunch, but not so the rest of us! Everyone who has a large water cooler would be kind if they brought it full of cold water, drinks to share, etc. We have not provided any drinks. Several groups usually gather together to share their picnic foods.

You have no doubt noted the maps enclosed to guide you to our destinations. We have also included a map to **WINEDALE.** Bill Welch is not to be with us on the Rustle because he is envolved with the "Oktober Gartenfest", International Festival in Round Top,that on Saturday, October 22nd, will feature for the first time events in Winedale. See the outside of the back page for the schedule of their events. Tickets will be sold to attend the events, which will conclude at 4:30. Heirloom Plant Sale will continue, however, and NO TICKETS WILL BE REQUIRED. The public is invited to participate in the sale of authentic plants from Texas-German sites. There will be few roses for sale, but Bill got Greg Grant to root a large number of cuttings of the ones he brought back from Williamsburg that he "Rustled" of **CLIMBING CRAMOISI SUPÈRIEUR.** We hear they will be on sale for about $1.50 each and are rather large for young plants!

QUEST FOR THE ROSE

The video BBC took of Phillips and Rix search to find old roses never officially identified but reportedly still growing in remote parts of the world was fantastic! About 65 members viewed it at Mercer Arboretum on Saturday, September 24th. All of us loved it but had difficulty understanding the British language. But pictures speak louder than words, so we did o.k. Our sincere thanks to Marion Brandes for bringing us such a wonderful bit of rose education, beautifully presented.

[EDITOR'S NOTE: We sincerely thank Dr. David H. Byrne for granting us the permission to use the following article regarding the Rose Research that is currently being pursued at A & M University. We are most grateful for his generosity. Little did we dream of this event coming to pass when we began our "Rose Rustling" back in the late 1970's!]

The Basye Chair in Rose Genetics
Rose Research at Texas A&M University

(Summary of the talk given at the Tenth Huntington Symposium on Old Roses, April 1994)

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I have had the privilege for the last 3 years of working with Dr. Robert E. Basye, a long time breeder of roses. Thus far it has been a fascinating journey, in part due to the man with whom I work, and also because of the intriguing nature of the rose with its incredible range of characters, its ability to form hybrids where one would never expect, its difficulties in seed germination, and the relatively uncharted territory of its genetic composition. My objective here is to introduce you to the man behind the Chair and how the idea came about, and to give you an overview of the activities of the Rose Genetics and Breeding Program at Texas A&M University.

The concept of an Endowed Chair which would focus on the study of the genetics and breeding of the rose was the brain child of Dr. Robert E. Basye and one of his former students Dr. Norman Naugle. Dr. Basye is a retired mathematician who taught such courses as Complex Variables at Texas A&M University for some 30 years. Throughout his career at Texas A&M University he always had his serious hobby of breeding roses in his backyard. For the last 25 years or so his backyard was about 50 acres! Of course, after retiring from teaching, he devoted himself to breeding roses full time. His objective has always been to develop healthy plants on which to hang those lovely rose flowers. In this quest he noted that the best resistance to blackspot and other important diseases seemed to be in some of the wild species. Consequently he has employed a range of species, both tetraploids and diploids, in his work. The tetraploids that he used most were *Rosa carolina* and *Rosa virginiana*, both with origins in North America. These, since they have the same chromosome number as most commercial rose cultivars, could be used directly. Although this work is important, his work with the use of diploid species such as *Rosa banksiae, R. wichuraiana, R. roxburghii, R. laevigata*, and others is much more interesting. Dr. Basye's involvement with the rose species began in the late 1940s, when he worked with Walter H. Lewis on the crossing relationships among the various wild roses (see Lewis and Basye, 1961. Analysis of nine crosses between diploid Rosa species. Proc.

Amer. Soc. Hort. Sci., 28:572-579). During this period he made numerous study trips to the rose species collection on the Horticulture Farm of Texas A&M University. Unfortunately the rose research program in Texas which flourished in the 1930s and 1940s, was being ended by the close of the 1950s. In spite of the decimation of the rose research at Texas A&M University, Dr. Basye continued with the rose species breeding work on his own. This experience of the loss of the rose research in Texas impressed on Dr. Basye the importance on establishing a rose research effort that would be independent of the whims of local politicians. He decided that the best way to establish a long term research program was to raise the funding from private sources and not from governmental sources. Thus the idea of establishing an Endowed Program in Rose Genetics was born.

Status of Fundraising

Dr. Basye has initiated fundraising for the Endowed Chair in Rose Genetics with a donation of approximately $300,000. The goal for the account is $2,000,000 which would generate enough income to ensure the continuance of an active rose research program. Other support for the program has come from research grants and funding for a graduate student from Texas A&M University, a donation from the Antique Rose Emporium, and the generous contribution of plant materials from the Antique Rose Emporium, Bear Creek Gardens, Bailey's Nurseries, Sequoia Nursery, Weeks Nursery, The Rose Co-Operative, and Heirloom Old Garden Roses. I have been delighted with the cooperation of the nurseries, breeders, and the rose community who have readily allowed me to inspect their nursery/breeding operations and "pick their brains" as I learn more about this fascinating crop.

Fundraising is an ongoing process which can take many different forms. The giving opportunities include donations to the main endowment fund to help raise it to the $2,000,000 goal, for special endowments to finance a graduate student assistantship, stipends for international visitors, or the salary of technical support; for the current expenses of the field, greenhouse, and laboratory research, and direct donations of facilities (greenhouses), equipment (vehicle, farm equipment, computers), and other materials (research supplies, computer software, books on roses or subscriptions to rose publications). The strength of the program will depend on its financial backing.

Objectives of the program

Dr. Basye, when he initiated the fund raising for the Chair in Rose Genetics and Breeding said that "We now need to unlock the treasures of the entire rose genus. One

man and one lifetime are not enough. The logical answer is a university, where the torch can be passed." He further stated that he "would not like to exclude any type of research pertaining to roses. Yet, ... especially in the early years, we (should) focus on what all gardeners want most of all: carefree roses... which are essentially immune to local fungi, need no winter protection, and are so healthy and shapely that little pruning is required." The major goal is to develop unique sources of disease resistant germplasm that other breeders and hybridizers can use in developing disease and pest resistant rose cultivars.

This includes a broad range of activities, such as establishing a rose germplasm collection focusing on rose species and disease resistant rose cultivars, evaluating rose germplasm for disease resistance and other important traits, and developing new breeding tools. These tools include the incorporation of traits from diploid roses into tetraploid roses, the development of genetic markers to aid in parental selection and identification, the development of marker assisted selection for disease resistance, and, as appropriate, the development of better protocols for the regeneration and transformation of the rose.

Germplasm Collection

A germplasm collection is merely the roses in a garden, although the garden or research plot of a breeder can be quite large and include roses in several sites. This collection of roses forms the basis of everything that a rose breeder does. The job of the breeder is to identify useful traits among the many rose plants of the collection and combine them into one cultivar. This takes an excellent idea of what you want, a knowledge of how to combine traits, lots of patience and a bit of luck.

The focus of the germplasm collection at Texas A&M University is to find and maintain excellent sources of disease and pest resistance. Thus far, our collection includes a wide range of rose species (150 clonal and 50 seed collections), commercial cultivars (about 100), and breeding materials from Dr. Basye (60 lines). Dr. Basye's breeding lines include diploid hybrids, autotetraploids, amphidiploids, and various complex interspecific hybrids. The emphasis on rose species has been with the diploid species because these are largely unexplored, are numerous, and very few have been used in the breeding of roses. Thus far we have identified excellent levels of blackspot resistance in such species as *Rosa wichuraiana*, *R. roxburghii*, *R. multiflora*, *R. laevigata*, *R. banksiae*, and *R. brunonii*. Although we have collected at least one plant of 50 rose species, this is only the beginning. One plant for any given species does not represent the range of traits in the whole species. Most species have a range measured in thousands of square miles and are not identical throughout. Thus many plants derived from distinct regions of the species range need to be collected to be able to evaluate it properly. It is an overwhelming job which will take

years to accomplish but it will yield tremendous advances in the development of better disease resistant roses.

Plant Health

When I approach a rose garden, such as the marvelous collection at the Huntington, I do not see the same things as most people. I do not look at the flower very much, but rather I look at the plant and get excited when I see a disease. I prefer to roam through rose gardens that have not been sprayed so I can see the differences between the rose cultivars in their ability to resist disease and pest attacks. In fact , we do not spray our germplasm collection at all and, when possible, we encourage the development of disease. If the rose cultivar is too disease infested, it is pulled and burned. But a germplasm collection is useless if it is not evaluated. Thus we have spent much time evaluating the health, and other characteristics of the collection. This includes the replicated trials we have planted to evaluate materials for blackspot resistance.

Blackspot Resistance Evaluation

For the last two years we have planted replicated trials at two locations (College Station and Overton) to evaluate the resistance to blackspot of about 130 clones (rose species, commercial cultivars, and breeding materials). There is a wide difference in the reaction of the cultivars to blackspot which ranges from death of the plant within two years ('Peace') to no spots at all (*Rosa roxburghii*). Our preliminary results indicate that there is a higher level of resistance to blackspot among the rose species that we had in our trial than what was seen in the commercial cultivars tested. The better of the commercial materials were 'The Fairy', 'White Meidiland', and 'Pearl Meidiland'. The cultivar 'Sunflare' is an interesting case. Initially it appeared to have excellent resistance to blackspot but in the fall it rapidly became infected with the fungus to the point that it was completely defoliated. What appears to have happened was that early in the season the race that was able to attack 'Sunflare' was rare among the population of blackspot races in the field. Throughout the spring and summer months the race began to multiply since it had a good host (plants of 'Sunflare'). In the fall, the population size of the 'Sunflare' specific race of the blackspot fungus was at a high enough level to completely defoliate the plants.

Races and Screening

The presence of blackspot races which differ in their ability to attack specific cultivars of rose has been shown several times and is one of the difficulties in breeding for resistance. Consequently, we need to understand the race situation in blackspot. This work

is being done at the Overton Experiment Station by Dr. Brent Pemberton and Gary McDonald in cooperation with the plant pathologist, Dr. Larry Barnes at College Station. This group is working towards identifying the major races of the blackspot fungus, growing the fungus for use in inoculation, and the development of rapid screening techniques appropriate for the screening of large populations of seedlings for the breeding effort.

Breeding Approaches

A major thrust of the program is to incorporate disease resistance traits from the diploid species into the commercial tetraploid rose germplasm. In this project we will run into two major obstacles. The first, is a chromosome problem: How to incorporate resistance genes from diploid rose species (14 chromosomes) into the tetraploid germplasm (28 chromosomes). The second, is how to transfer only the resistance genes from the diploids without all the other undesirable associated traits such as once blooming, poor bush habit, and poor flower characteristics.

Traditionally, diploid genes have been incorporated into the tetraploid germplasm by a direct cross between a diploid plant and a tetraploid plant. This yields a triploid (3 sets or 21 chromosomes) which is generally sterile because there is not an even number of chromosome sets (which is essential for the regular production of pollen and ovules in the rose flower). Nevertheless, these triploids did occasionally produce fertile tetraploids by selfing or outcrossing. Thus this approach has worked through the years to incorporate genes from diploid species as *Rosa wichuraiana, R. multiflora, and R. chinensis* into the tetraploid germplasm. Although it has worked, the range of diploid rose cultivars and species used in rose breeding has been severely limited by the inherent sterility of the triploid rose.

An alternative is to develop tetraploids by doubling the chromosome number of diploid species with a chemical called colchicine. There is a general rule in biology that states that if the diploid is fertile its tetraploid form will be sterile but if the diploid is sterile its tetraploid form will be fertile. Thus to produce a fertile tetraploid, a sterile diploid needs to have its chromosome number doubled. The best way to produce a sterile diploid is by crossing two distantly related diploid species such as *Rosa rugosa* and *Rosa wichuraiana*. This approach of transferring the diploid genome to a tetraploid level is termed amphidiploidy. The best example of this is *Rosa kordesii* which is a *R. rugosa x R. wichuraiana* amphidiploid. We currently have four other amphidiploids which we are evaluating for their usefulness in breeding. These are 86-3 (*laevigata x banksiae*), 84-1000

(*roxburghii x laevigata*), 86-7 (thornless *wichuraiana x rugosa rubra*), and 89-1 (*roxburghii x thornless wichuraiana*).

Marker Assisted Selection

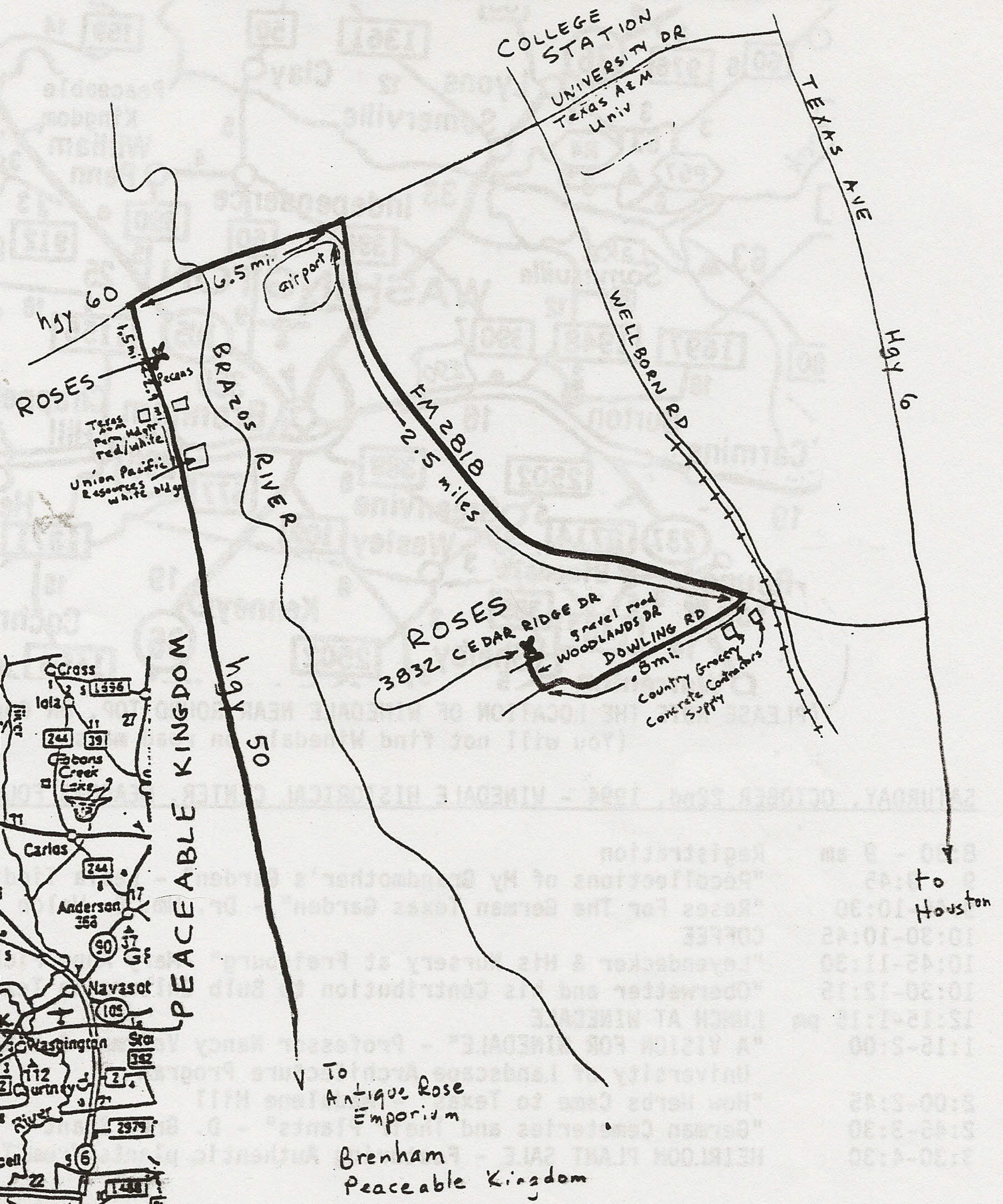
Genetic markers such as isozymes, RAPDs (random amplified polymorphic DNA), and RFLPs (restriction fragment length polymorphism) can be used to help in the selection of hard-to-select traits. An example of this would be the selection of roses for blackspot resistance. Resistance to blackspot is difficult to measure due to complex interactions among environmental conditions, the pathogen (fungus), and the rose cultivar. There is a need to find an easily identified marker gene closely linked to blackspot resistance. This would enable the elimination of the susceptible seedlings from the breeding population at an early stage. One way to do this is to make a genetic linkage map of the rose using easily selected markers and identifying those which segregate with blackspot resistance. Such a system would allow the more rapid transfer of resistance genes into a commercially useful genetic background.

Future directions

The present direction is toward the basic breeding and germplasm evaluation that will give our program its base of genetic materials to work with. Everybody's cooperation in this phase is needed. We are actively soliciting germplasm from the people that we know and are always looking for additional sources of rose species and disease resistant rose germplasm. I am delighted to hear the observations of others and plan to work toward developing a national field testing program to evaluate the disease resistance of rose varieties.

As the work progresses, more effort will be given to understanding the genetics of the genus and creating a genetic map. This will in turn facilitate the efficient fingerprinting of new varieties, the elucidation of the origin and genetic relationships among varieties and species, and the development of more efficient selection procedures. Finally, as time and resources permit, we will strive to improve our ability to genetically transform roses to create the possibility of further expanding the traits with which we can work.

Given the increasing number of pesticide regulations, the awareness of their safety and pollution hazards, and the expense of pesticides, combined with the public demand for maintenance-free landscape plants, the development of disease resistant rose germplasm and the expansion of the rose germplasm base is essential if the cultivation of rose is to expand into the 21st century. The purpose of the Basye Endowed Chair in Rose Genetics is to develop this new disease resistant germplasm for the use of the breeding programs and the gardeners of the world, but this can only happen if the program obtains support from all sectors of the rose industry.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Pecans
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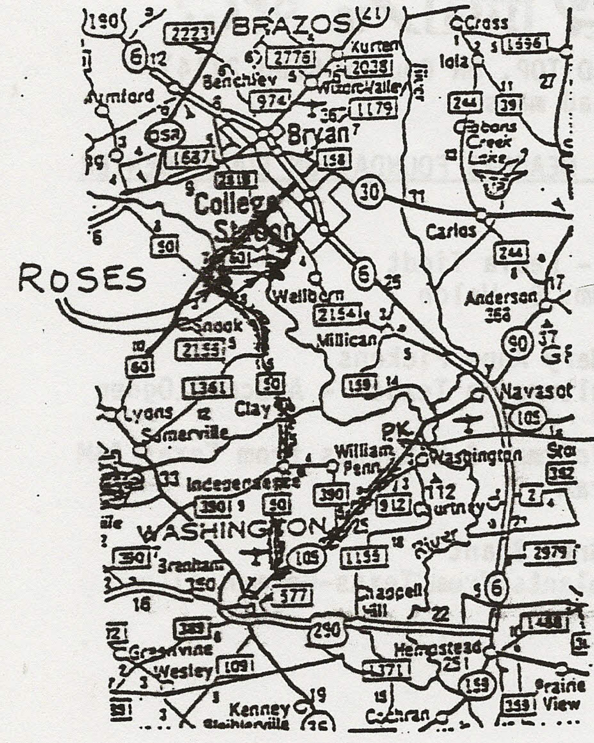
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Kurten
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Washington
Independence
WASHINGTON
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Greenvine
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Kenney
Cochran
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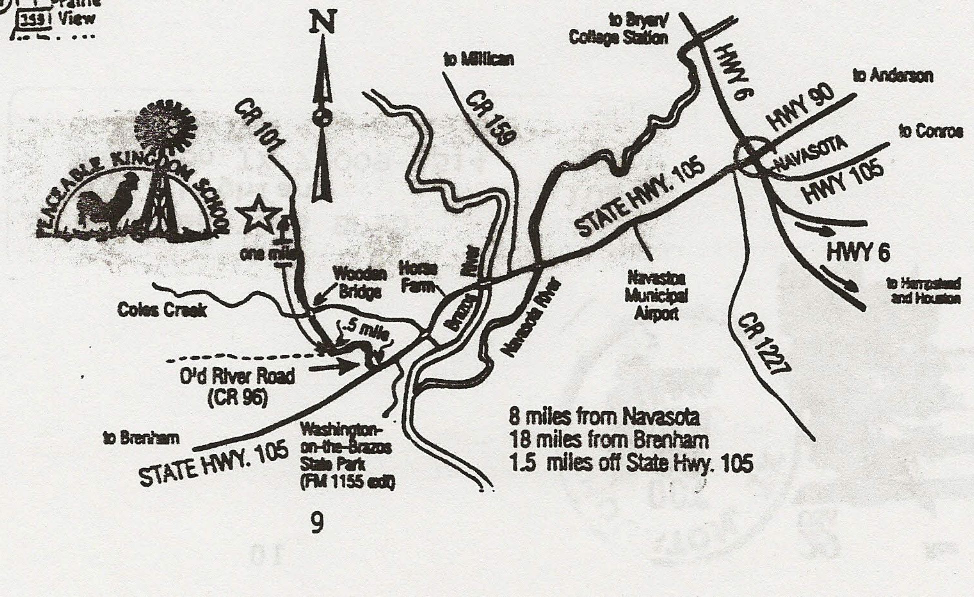
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PEACEABLE KINGDOM SCHOOL
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one mile
Wooden Bridge
Horse Farm
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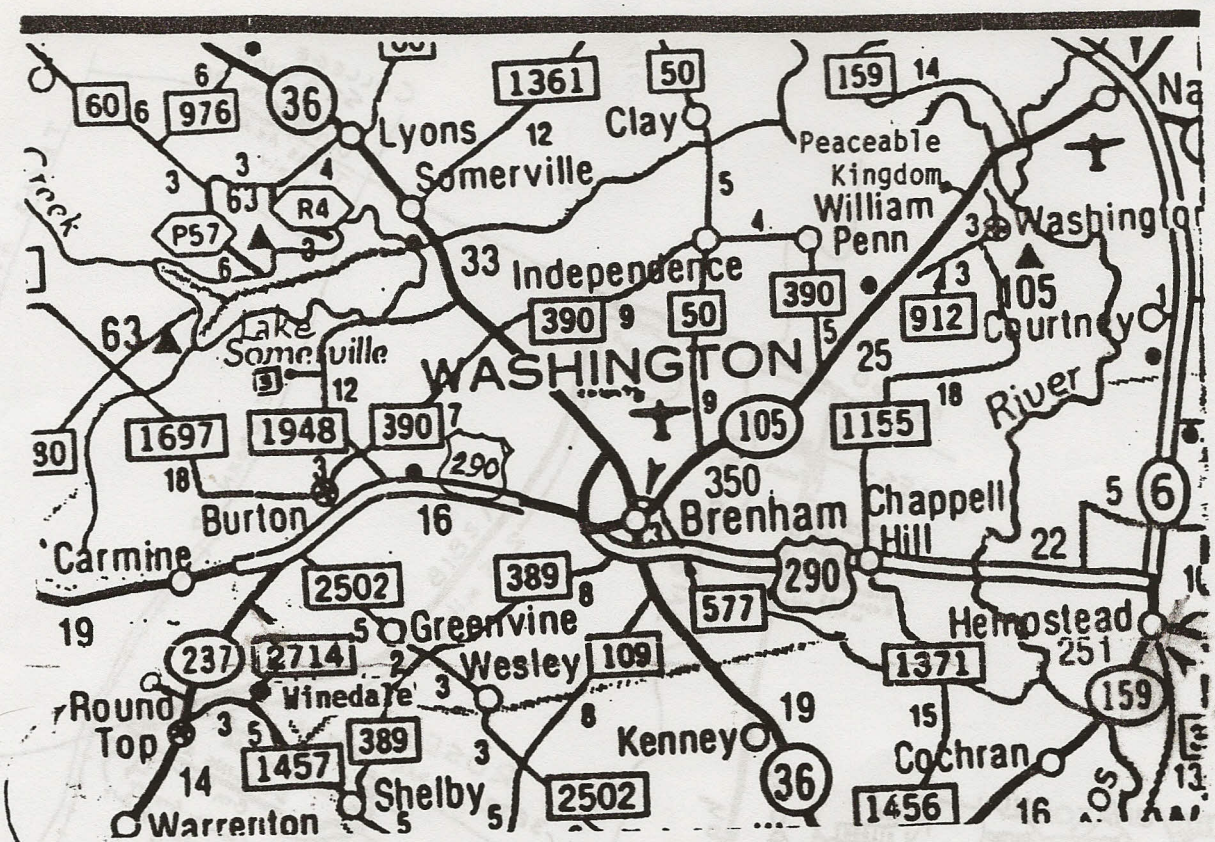
Old River Road (CR 96)
to Brenham
STATE HWY. 105
Washington-on-the-Brazos State Park (FM 1155 exit)
Brazos River
Navasota River
to Millican
CR 159
to Bryan/College Station
HWY 6
HWY 90
to Anderson
to Conroe
NAVASOTA
HWY 105
HWY 6
to Hempstead and Houston
STATE HWY. 105
Navasota Municipal Airport
CR 1227
8 miles from Navasota
18 miles from Brenham
1.5 miles off State Hwy. 105



(PLEASE NOTE THE LOCATION OF WINEDALE NEAR ROUND TOP, ON County Road 2714)
(You will not find Winedale on road maps)

SATURDAY, OCTOBER 22nd, 1994 - WINEDALE HISTORICAL CENTER, MEADOWS FOUNDATION EDUC. CENTER

8:30 - 9 am	Registration
9 - 9:45	"Recollections of My Grandmother's Garden" - Leola Tiedt
9:45-10:30	"Roses For The German Texas Garden" - Dr. Wm. C. Welch
10:30-10:45	COFFEE
10:45-11:30	"Leyendecker & His Nursery at Freisburg" -Mary Anne Pickens
10:30-12:15	"Oberwetter and his Contribution to Bulb Culture in Texas" - A. Scott Ogden
12:15-1:15 pm	LUNCH AT WINEDALE
1:15-2:00	"A VISION FOR WINEDALE" - Professor Nancy Volkman & Students from Texas A&M University of Landscape Architecture Program
2:00-2:45	"How Herbs Came to Texas" - Madalene Hill
2:45-3:30	"German Cemeteries and Their Plants" - D. Greg Grant
3:30-4:30	HEIRLOOM PLANT SALE - Featuring Authentic plants from Texas-German sites.

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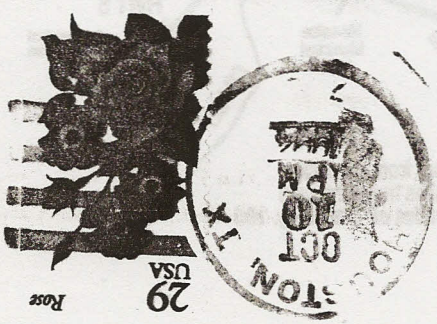

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