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NEW MEXICO TREE FARM NEWS



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RIP VAN WINKLE AWAKES

Will Stapleton, NM Tree Farm Committee Chairman

Do you remember the children's story about a fellow named Rip Van Winkle? The short version is that he fell asleep one day and didn't wake up for 20 years. Can you imagine the changes that had taken place during that period of time? For one thing, he had grown a long white beard. His clothes were certainly different from everyone else's.

In a way, I am like Ol' Rip – Jeanne and I have had our forested property in the foothills of the Zuni Mountains since July of 1979. It was our mental health retreat from high-stress jobs so we didn't care if it was a bit wild and wooly. We slept while it got woollier, or should we say woodier. ZZZ

We started building a fence along the east side in 1979. We didn't make much progress because it was so hard pecking holes or driving steel posts in sandstone for the first 300 feet. We cut a few of our precious (mostly dead and seasoned) juniper trees to make braces in the fence line. We didn't cut many trees, especially live ones. ZZZ.

We became Pioneer Tree Farmers on October 20, 1986. This was after the inspector had visited the property, at





Author working on his Tree Farm.

our invitation, and he found us worthy to be part of the American Tree Farm System Family – she was pleased with the clean up of trash piles left by the developer, the start at harvesting fuel-wood (dead trees), and tree planting. ZZZ

We started attending New Mexico Tree Farm meetings so we could go on field tours and see what the other tree farmers were doing. The thinning job that Bill Degenhardt did on his Ponderosa Pine grove in 1988 was impressive. He cut LIVE trees and it looked good. Fast forward, please, to 1991. Another neat thinning job at Alice Wolfe's tree farm. A slight awakening. ZZ.

We became certified tree farmers on November 1, 1991. This carried with it, a charge to develop and sustain a healthy forest. During the pre-certification inspection visit, the Inspecting Forester showed me how to thin Pinon/Juniper forest. I made a lame start, because it was too difficult to determine which to keep and which to cut. I set it aside to do easier things. ZZZ.

Our first stewardship plan was written in 1993 after a team of foresters visited, at our invitation, and gathered much information. They even marked trees that should be cut so that the stand wouldn't be so dense. Another try at thinning – what hard, grubby work! It'll keep... ZZZ.



Fast-forward again to October 14,1997. Our next-door neighbor to the tree farm called us at our home in Aztec, NM, to inform us that winds of 45-50 mph had toppled many large trees. When we got there on October 16th, it was all too plain that a small twister had cut a 150 feet wide path through our property and those of another owner for several miles. It twisted, or broke off at least 15 of our large trees a ways up the trunk. Rip and the Mrs. got a wake up call here. Yessiree! Other than cleaning up the mess, which meant cutting some injured but LIVE trees, nothing more was done. ZZZ.

In 1999, we found a person in the Candy Kitchen Community (that's where the tree farm is located) who was willing to cut the standing dry wood for the firewood involved. He also agreed to burn the slash. We cosigned a contract regarding what he would do and he commenced work on September 17, 1999. Although he claims to have removed 40 cords of firewood and burned lots of slash, the brushy appearance of the forest was about the same.

On October 9, 1999, we attended a field day at Sara Jo Patterson's tree farm. Some more impressive thinning jobs and use of slash in arroyos to control erosion. The next year, on September 23rd, we were at Camp Chimney Spring where they were beginning a third complete thinning of the entire camp property. What an achievement, what dedication. There is a stirring, but health problems are now interfering. ZZZ.

Maybe access roads would help make thinning easier because they would provide a place for piling cut wood and an open place for slash burning. Don't forget easier access to seedlings for supplemental watering. Two roads were completed in 1999 and 2001 for a total length of 1/3 mile. Had to do some preliminary thinning to get the road grader through the tight places. Z.

I applied for some tail-end SIP grant money in 2003 to do 2.5 acres of thinning and burning. Got a late start due to a fire ban in June and July (Got going good after the monsoons started). I was a little hesitant at first, but as the patch got bigger, cleaner and prettier, it was a snap. Winter will probably close me down, but I will be eager to start again in February or March. No more Z's, Ol' Rip has done woke up!

Bosque Demonstration Forest Open House a Hit.

Nick Smokovich & Doug Boykin (NMSF – Socorro District)

On Friday October 17th, 2003 the New Mexico Tree Farm Program dedicated its fourth outdoor classroom/demonstration forest. This demonstration





Bosque Demonstration Forest – treated side on the right and untreated on the left.

forest is on property owned by Sue and Allen Conklin. The demonstration forest illustrates good forest management practices in the Middle Rio Grande Bosque region of New Mexico. Recent increases in attention paid to these forested ecosystems makes this and ideal educational tool to teach future Tree Farmers about the importance of good forest and land use management.

Dr. Jane Christian 2003 New Mexico Tree Farmer of the Year

Nick Smokovitch (NMSF – Socorro District)

The 2003 New Mexico Tree Farmer of the Year title was bestowed on Dr. Jane Christian on October 18th, 2003. Dr. Christian lives on 11.33 acres in the Last Frontier Subdivision near Datil, NM. Dr. Christian received her award and gifts, including a chain saw generously donated by the Stihl Corporation at an open house on her Tree Farm. Everyone in attendance was treated to a tour of the tree farm, an explanation of land improvement projects by our generous host and a delicious lunch.



Chairman Will Stapleton gives Dr. Jane Christian her Tree Farmer of the Year Award.



Dr. Christian enrolled her property in the American Tree Farm Program in 1995 and was certified in 2000. Since that time Jane has installed a wildlife pond, participated in the 20 communities cost share thinning program, controlled noxious weeds, and heads up the Horses Mountain Forestry Group.

Maxwell Middle School Students & Bluebirds Make a Connection

Roberta Padilla (Private Consultant) & Arnie Friedt (NMSF – Cimmaron District)



This past fall, seventh and eighth grade students from Maxwell Middle School made a special connection with their environment in an attempt to help preserve some vanishing wildlife. The students, along with their science teacher, Ms. Desiree Shaw, Maxwell Municipal Schools Superintendent Dr. Peery and Maxwell High School Senior Brian Kelly, visited the Philmont Demonstration Forest. The site is open to all interested groups for the sole purpose of forestry education, but this group visited for a special purpose; **Bluebirds**.

The beautiful Mountain and Western Bluebirds are found throughout New Mexico from the meadows to the mountains. The Eastern Bluebird is also found in the Philmont area. They are cavity nesters unable to create their own cavities. They use natural cavities, or those created by birds such as woodpeckers, for their nesting sites. The declining bluebird population is a result of competition for natural nesting cavities from the more aggressive, introduced English Starlings and English sparrows and swallows. In the East nesting boxes helped increase the bluebird population. They must be constructed properly and placed in proper locations for bluebirds to use them. Bluebirds born and raised in nesting boxes become imprinted to them, and will look for them and use them year after year. Recovery of the bluebird population is largely attributed to human intervention through the construction and placement of nesting boxes.

New Mexico students are also doing their part for the bluebirds. Aztec students of the Woodworking II class prepared 500 bluebird nesting box kits as a service-learning project. The New Mexico Youth Conservation Corps (YCC) in Aztec packaged the kits with hardware, instructions on assembly, and bluebird



information sheets. The 500 kits were distributed throughout the state by the Forestry Division to middle schools where students assemble the kits, pair up with a tree farmer and place the box at a local tree farm. This project was funded by the American Forest Foundation and administered by the New Mexico Tree Farm System.

Maxwell Middle School received 15 kits. Students assembled the boxes and visited the Philmont Demonstration Forest where State Forestry Division Forester Arnie Friedt demonstrated the importance of the location and mounting of their bluebird nesting boxes. This activity will serve as one of the 9 learning stations in the demonstration forest.

Maxwell High School Senior Brian Kelly presented a paper to the students on bluebirds. To commemorate the eventful day, Friedt invited the group to sign a 50th Anniversary Smokey Bear baseball. A drawing was held for the ball and the winner was Brian -a fitting end to the day as the senior displayed exemplary leadership.



Maxwell Middle School Students.

The demonstration forest is a 45-acre mixed conifer forest encompassing a 1-mile self guided tour, and 9 learning stations with 4 timber harvesting methods demonstrated. It is open to all school groups from April1-May 31 and Sept.1 thru Oct. 31. If interested in visiting the site contact forester Arnie Friedt with the NM Forestry Division @ 376-2204, and please allow at least 2-weeks prior notice.



Students Use Demonstration Forest for Training.

Shannon New (NMSF – Las Vegas District)

This Spring, students from Robertson High School in Las Vegas, New Mexico have been using the Rancho Gascon Demonstration Forest as a training ground to improve their field forestry skills. The students are competing in the state FFA forestry competition where they will compete against other high school students from throughout New Mexico. Skill tests they perform include tree identification, proficiency in tree measurements such as tree height and DBH as well as field navigation work. The Demonstration Forest provides an ideal training environment for these activities.



Rancho Gascon Demonstration Forest.

Inventorying your Forests

John Harrington (NMSU – Mora Research Center) & Doug Boykin (NMSF – Socorro District)

Over the next two years a committee of professional foresters from research institutions, government agencies and consultants will be writing a series of articles in the New Mexico Tree Farm Newsletter on how Tree Farmers can go about assessing or inventorying their forests. Why is inventorying forests important to a Tree Farmer? Several reasons, first, the best way to develop and implement a management plan on your tree farm is to know what you are starting with from trees, grass, forbs, soils, etc. A second reason is so that you can see the effects of your management decisions on your forests, both in the short term and long term. Thirdly, understanding the inventorying process will better help you and your service forester or resource professional vision for your property. Lastly, and maybe the most



important, is inventorying or assessing your forests gives you a good reason to spend more time in your forests.

The concept of "inventorying" encompasses many attributes of a forest including, trees, shrubs, herbaceous plants, soil stability, erosion conditions, nutrient status, wildlife habitat and on and on. But where should one start? Well, we have decided to begin the trees and forest stands. In this issue we will discuss the basics of point sampling to determine stocking levels. tree and diameter distributions. The techniques presented will apply to forest stands such as ponderosa pine, mixed conifer and spruce-fir stands. In the next issue we will present information on how to inventory the trees in woodlands such as pinon-juniper woodlands. As time goes on, a new series of articles will appear in the Newsletter discussing management options for your forests. Selecting management options will depend on what type(s) of forests are on your tree farm and the condition they are in; hence, the need to know how to inventory.

Will being able to conduct your own inventories make your service forester obsolete? Absolutely not, your service forester provides a critical role in assisting you in how to interpret your inventories and implement your objectives. Your service forester stays current on the most up to date research on forest management and can communicate that information directly to you. Being able to conduct your own inventories will allow you to better understand your service forester's recommendations, terminology, and way of doing business, as well as make visits by your service forester for effective and efficient.

We hope this series sounds as exciting to our Tree Farmers as it does to our service foresters. Having a continuing way to pass on the passion of good forestry to our landowners is our fundamental mission.

Point Sampling

John Harrington & Mark Loveall (NMSU – Mora Research Center)

Point sampling, also called variable-radius plot sampling or variable-plot sampling, is a type of forest sampling or inventorying in which the sample is selected with a probability proportional to tree size (SAF 1998). This means trees are selected for inventorying based on their size not frequency of occurrence. This type of sampling is easier, quicker and less prone to personal errors. This type of inventorying was first developed by an Austrian forester, Walter Bitterlich in the late 1940's. Information generated from this type of cruising can be used to generate tree frequencies on a unit area basis. Depending on what other tree attributes are collected



during the survey or inventory process, different information can be obtained about the forest. For Tree Farmers additional information to collect during point sampling should be the diameter at breast height (DBH) and species for all inventoried trees. From this information graphs of diameter distributions and stocking levels can be developed (Figure 1).



Figure 1. Graph of trees per acre.

You will need three types of equipment to conduct point sample inventories of your forest. First you will need a sighting instrument or angle device. There are three common types of sighting instruments: prisms, angle gauges, relaskops (Photo 1). The sighting instrument determines what trees are considered "in" on your tally and which trees are not.



Photo1. Sighting instruments; prism on right and angle gauge on left.

Background Information:

How point sampling works is a "sighting angle" instrument (i.e. prism or angle gauge) is used to select trees for inclusion in the sample or tally. Whether a tree is included or excluded is a function of the sighting angle of the instrument, the tree's diameter and distance from the person holding the sighting instrument, called plot center. The larger the tree, the further it can be away



from plot center and still be included in the survey. Probably the most common sighting angle used is 104.18 minutes which results in what is called a 10 basal area factor (BAF). Using a 10 BAF instrument, the ratio of the tree's diameter to its maximum allowable distance from plot center is 1:33.0. This is to say that to be included in the tally, a 2-inch diameter tree must be within 66 inches of plot center or a two foot diameter tree (24 inches) must be within 66 feet (792 inches) of plot center. For more information on how these sighting instruments work, contact your service forester or a forest mensuration book.

The second piece of equipment you will need is a method of measuring a tree's DBH. There are several instruments you can use to do this including a diameter tape, tree calipers and a Biltmore or cruiser's stick (Figure 3). {Later in the newsletter is a description of how to construct your own Biltmore stick.}





For general information inventories, classifying tree diameters into 2" categories is sufficient. Finally you will need a tally sheet to record your inventory information (Figure 4). Tally sheets can take on lot of different formats depending on what type of data is being collected.



Figure 2. Example tally form.



How to go about to conducting a point sampling inventory.

To set up your "timber cruise" I recommend you contact your service forester. Your service forester has had extensive training in how to determine the number of samples points and cruise layouts necessary to inventory your forest. In the mean time you can still put in inventory points throughout your forest to help you better understand your forest conditions. Here is how:

Once you are well inside the boundaries of your tree farm you can establish your first sampling point. First if you are using a prism, the prism is the plot center and you will move in a circle with the prism being the center of the circle (Figure 3a). If you are using an angle gauge your eye is the plot center (Figure 3b).



Figure 3. a. Prism is plot center; b. person is plot center when using angle gauge.

As you look through your sighting equipment you will register all "in" trees. If you are using a prism, this would be all trees whose trunks are at least partially connected through the view of the prism (Figure 4a). Trees that are not connected through the prism are not tallied (Figure 4b).





If you are using an angle gauge all the trees whose trunks entirely fill the opening of the angle gauge are tallied (Figure 5a &5b). For each tree that is tallied record the species and DBH on your tally form.





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Figure 5. a. tallied tree; b. non-tallied tree.

What happens when you get to a border-line tree that may be in or may be out?

You will need to measure the DBH of the questionable tree and the distance from the tree to plot center. Divide the distance to the tree by the diameter, using the same units. If this value is less than the critical ratio then the tree is tallied. If the number is greater than the critical ratio then the tree is not tallied. If the value is right on the ratio the first tree is tallied, the next is not and so on. The critical ratio for 5 BAF is 46.7; for 10 BAF is 33.0; and for 20 BAF is 23.3. For example, let's say you have a tree that the edges just barely line up through the prism. You measure the tree and it has a 10" DBH and is 27' (324") away from plot center. Now using the method above you divided 324 by 10 and get 32.4 which is less than 33, so the tree is tallied. Had the tree been 28' (336") away from plot center, the tree would not have been tallied since 33.6 is greater than 33. Our recommendation is to use the method of tallying the every other borderline tree as you would if they are absolutely on the edge. This will save you the time and energy of measuring all the guestionable trees. If you put in several inventory points this "one in, one out" technique is fairly accurate.

What to do with your cruise (inventory) data?

The first step is to convert your inventory to trees per acre. Depending on the BAF of your sighting equipment and the diameter of the tree you can convert the number of tallied trees to the number of trees per acre. Table 1 provides the conversions of tallied trees to number of trees per acre based on tree diameter and BAF. Once converted to trees per acre plot your stocking



Table 1. Trees per acre conversions by diameter class.

DDU	D 4 E E		
DBH (inches)	BAF 5	BAF 10	BAF 20
2	229.19	458.38	916.76
4	57.30	114.59	229.19
6	25.47	50.93	101.86
8	14.32	28.65	57.30
10	9.17	18.34	36.67
12	6.37	12.73	25.47
14	4.68	9.35	18.71
16	3.58	7.16	14.32
18	2.83	5.66	11.32
20	2.29	4.58	9.17
22	1.89	3.79	7.58
24	1.59	3.18	6.37
26	1.36	2.71	5.42
28	1.17	2.34	4.68
30	1.02	2.04	4.07
32	0.90	1.79	3.58
34	0.79	1.59	3.17
36 (+)	0.71	1.41	2.83

levels (trees per acre) by diameter class and species (Figure 1). {In the next few months the New Mexico State University – Mora Research Center will be posting a downloadable spreadsheet program on their website which will automatically do this process for you.}.

Now you can graphically see how your forests are stocked. Over the next several issues of the New Mexico Tree Farm Newsletter a group of professional foresters will be discussing different options for forest management using graphs such as this as a basis for decision making.

Helpful Vendors for Inventory Equipment

Forestry Suppliers: 1.800.647.5368 www.forestry-suppliers.com

Ben Meadows: 1.800.241.6401 www.benmeadows.com

Baileys: 1.800.322.4539 www.baileys-online.com



How to Make Your Own Biltmore Stick

Mark Loveall & John Harrington (NMSU – Mora Research Center)

What is a Biltmore Stick?

A Biltmore Stick is most commonly a wooden stick, about the length of a normal yardstick. It is used to estimate the diameter of the main stem (bole) of a tree. There are more accurate ways to determine diameter, but the Biltmore Stick is a quick and simple method to determine the diameter class of a tree.

Much like a clinometer, which is an instrument used to measure tree height, the Biltmore Stick is based on trigonometry. The eye becomes the apex of an angle which is tangent to the trunk (Figure 1). The Biltmore stick is calibrated so that the angle is directly converted to a diameter reading.



Figure 1. The geometry behind the Biltmore Stick.

How to use a Biltmore Stick.

Most Biltmore Sticks are designed to be held 25 inches away from the eye. The stick is placed against the trunk, perpendicular the axis of the tree. To measure diameter at breast height (DBH), the most common diameter measure in forestry, place the Biltmore Stick at 4½ feet (\approx 1.3 m) above the base of the tree (Figure 2a).



Figure 2. Locations for measuring diameter at breast height (DBH).



Simply read the number nearest to the trunk edge (Photo 1). Figures 1b – e illustrates where to measure tree diameter for various tree conditions you may encounter.



Photo 1. Reading a Biltmore stick. (note the diameter of this tree is 20 inches).

How to make your own Biltmore Stick.

To make your own Biltmore Stick you will need the following: a light yet durable stick of wood about 30" long, and ½ to 1" thick, a permanent marker such as a Sharpie® or a wood burning tool and a measuring device such as a ruler, yardstick or measuring tape. To create your Biltmore Stick to read in English units (2" increments) use Table 1 as a guide. Starting at the left end of the stick, mark the gradations at the appropriate distances from the left end (Photo 2).



Photo 2. Marking distances on Biltmore stick

When you are complete your Biltmore Stick should look something like those in Photo 3.



Photo 3. Commercial (lower) and home made (upper) Biltmore sticks.

Table 1. Points at which to mark diametergraduations along Biltmore Stick.

Make the mark for tree diameters	at the following lengths along the stick.		
2	1 ¹⁵ / ₁₆		
4	3 ¹¹ / ₁₆		
6	5 ³ / ₈		
8	6 ¹⁵ / ₁₆		
10	8 ⁷ / ₁₆		
12	9 7/8		
14	11 ³ / ₁₆		
16	12 1/2		
18	13 ³ ⁄ ₄		
20	14 ¹⁵ / ₁₆		
22	16 1/16		
24	17 ½		
26	18 ³ / ₁₆		
28	19 ½		
30	20 ¹¹ / ₁₆		
32	21 ³ / ₁₆		
34	22 ½		
36	23 ½		
38	23 ¹⁵ / ₁₆		
40	24 ¹³ / ₁₆		
42	25 ¹¹ / ₁₆		
44	26 ½		
46	27 ⁵ / ₁₆		
48	28 ½		
50	28 7/8		
52	29 5/8		
54	30 ³ ⁄ ₈		
56	31 1/8		
58	31 ¹³ / ₁₆		
60	32 %		

NOTE: the number which designates the point at which to mark graduations (right-hand column) is measured from the starting point on the left end of the stick; it is not distance from the previous point.



A Mighty Wind Blows Across a New Mexico Tree Farm

John Harrington (NMSU – Mora Research Center) & Carol Bada (NMSF – Las Vegas District)

Most often we think of Tax Day when we think of April 15th. However, April 15th, 2003 brings back other memories for the Bartley Family. The Bartley's, Editha, her son John and his wife Tamera, own and operate the Gascon Ranch Tree Farm, one of New Mexico's first Tree Farms. The Gascon Ranch is both a lumber and ranch operation located in the foothills of the Sangre de' Cristo Mountains in Mora County. The timbering activities have generated three product streams in the past several years: fuelwood, rough cut lumber, which John Bartley produces at his mill on the ranch, as well as round wood which was being commercially harvested up until the closing of the doors of the Rio Grande Forest Products Mill in Espanola, New Mexico last Spring.

In the wee hours of the morning of April 15th last year, a frontal storm blew over the region. One tremendous gust blew down from the 11,000+ peaks on the western portion of the ranch causing a tremendous amount of damage to the forests of the Gascon Ranch Tree Farm and surrounding area (Photo 1).



Photo 1. Wind damaged car.

One of the most striking effects was a large, approximately 25 acre blowdown, where nearly all the trees were leveled (Photos 2). This particular area had been part of a much larger harvesting operation, which had been conducted about a year prior to this event with roughly half the basal area being removed. The residual stand was primarily a mixed conifer stand with Douglasfir, white fir, southwestern white pine, ponderosa pine and some aspen. Why this stand?





Photo 2. Blow down area.

Many factors contributed to this event, but most assuredly the tremendous winds along with spring snows that reduced soil firmness were the main culprits. In the blow down area one could see where adjoining canyons feed into the area by looking at the direction the trees lay. Several of these canyons fed into the area, resulting in a mighty wind. A second factor, which contributed to the large blow down, was the species of trees that were affected. The majority of the canopy was occupied by white fir and Douglas-fir, both relatively shallow rooted species (Photo 3). It was interesting to



Photo 3. Shallow rooted fir.

see that the large trees which remained standing were predominately the deeper rooted ponderosa pine (Photo 4). A third contributing factor may have been the previous logging activity. Trees growing in a dense canopy normally are not exposed to strong winds and can become susceptible to windthrow following a timber harvest. Shallow rooted species such as aspen,





Photo 4. Mostly ponderosa pine left standing.

Douglas-fir and white fir can be particularly susceptible to windthrow following harvesting operations.

Elsewhere on the Gascon Ranch Tree Farm and in the general area large trees in dense canopies also went down with the effects of the wind (Photo 3).

After several days of surveying the damage from the Tax Day Windstorm, John Bartley adapted his forest management and plans for the upcoming year to address the impacts of the windstorm. First and foremost he needed to repair miles of fences that went down due to trees falling. Since May, John has been harvesting both the trees in the heavily affected area as well as the isolated trees that went down. The management goals for the particular stand have changed from timber production to a combination of forage production for wildlife and livestock and timber production.

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New Mexico Tree Farm Executive Committee

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If you would like to advertise your Tree Farm, your products, or your company, please send us the information and we will be glad to include it in the next newsletter.

Donations to cover printing and mailing cost are always appreciated.

Dear New Mexico Tree Farmers:

The New Mexico Tree Farm Executive Committee has been discussing style and content of the newsletter and would like to hear from you. We feel the newsletter provides an excellent means of bringing to your attention accomplishments of other Tree Farmers, policy issues that may affect you and your tree farm as well as an educational tool. We will continue to improve the format and structure of this newsletter until we feel it is meeting you, the Tree Farmer's needs. We are planning the next issue (Volume VII (2)) and hope to have it out by early this summer. We are planning to have a series of constant columns such as: A Message from the Chair, Policy Updates, News You Can Use, etc. John Harrington, Editor (joharrin@nmsu.edu)





Order Your New Mexico Tree Farm Logo

You can still order your New Mexico Tree Farm logo now. An eight inch logo patch costs \$52, a six inch patch costs \$21, and a 4¼ inch patch costs \$18. If you wish to have the logo sewn on a garment (vest, shirt, or jacket) please included it in the package. If you wish the package sent back to you, please include a selfaddressed and durable mailer large enough for the garment and/or patch. Make checks payable to: Will Stapleton, NM Tree Farm Program, P. O. Box 356, Aztec, NM 87410. Thank you for your support of the New Mexico Tree Farm Program.

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