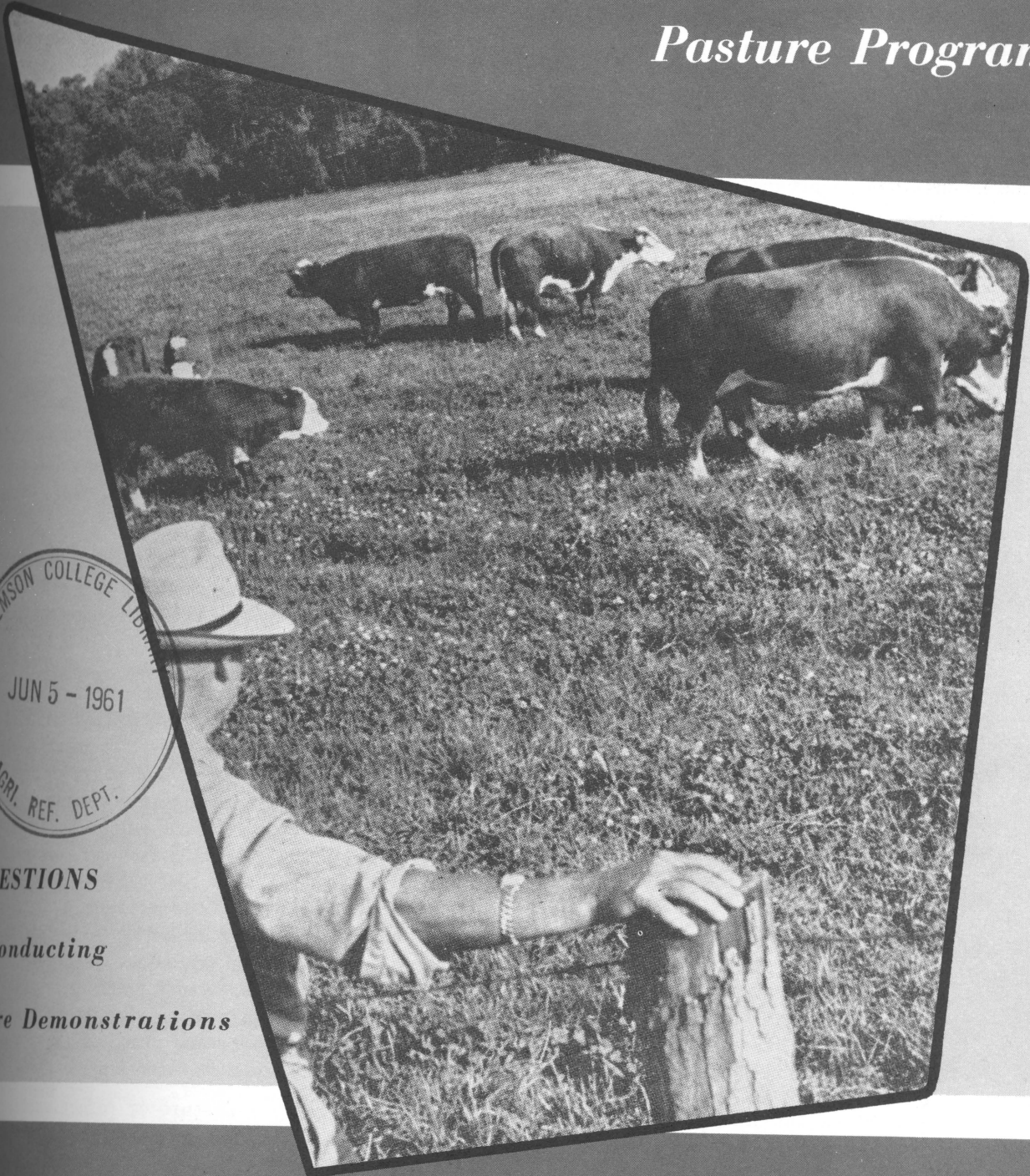


BUILDING

The County

Pasture Program



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SUGGESTIONS
 For Conducting
 Pasture Demonstrations

BUILDING THE COUNTY PASTURE PROGRAM

Suggestions for Conducting Pasture Demonstrations

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The best extension pasture program for any county is the one that most nearly meets the needs of that particular county. The program should be developed with local leaders and should be based on the needs of the people using pastures. A program developed for the people without their help is much less likely to receive their support and be successful.

Forage problems encountered and procedures that may be used for building a county pasture program and carrying it out successfully vary from county to county. This guide contains suggestions that may be adapted to fit any county situation.

I. The pasture or forage subcommittee

A. This subcommittee of the county program building committee will help to:

1. Determine needs and procedures.
2. Coordinate this part of the total county program with other phases.
3. Create interest in and awareness of need for the program.
4. Conduct the county pasture or forage program, enabling the agent to make more efficient use of his time.
5. Sell the total program to others.

B. Informed, active pasture or forage subcommittee members can:

1. Assist in locating demonstrators and demonstration sites.

2. Arrange for demonstration materials such as seed, fertilizer, 2,4-D and other weed control chemicals, equipment and signs.

3. Assist with demonstration establishment and maintenance jobs, such as plowing, planting, fertilizing, mowing, spraying, cultivating or hoeing, etc.

4. Keep agent informed on progress of demonstrations.

5. Assist with harvest of demonstration plots.

6. Assist with arrangements and facilities for tours, field days and meetings.

7. Publicize and increase interest in meetings, tours, or field days and demonstration results through personal contact.

C. Subcommittee membership

Members should be individuals who will take an active, unselfish interest in helping develop and carry out the county pasture or forage program. Membership on the subcommittee will vary with the situation from one county to another. The membership would be composed basically of cattlemen or dairymen, or both, depending on the situation. Possibilities for other members are bankers, credit agency representatives, dealers in seed, fertilizer and machinery and other business and agricultural representatives.

Strictly a pasture or forage subcommittee will not be needed in all cases.

Many counties have successfully used a pasture and range subcommittee. In others, pasture and dairy or beef subcommittee membership is combined. In such cases, it may be best to have a chairman for pastures and another for beef or dairy.

every other year, is to analyze the county situation. This should reveal the major problems, the work most needed and permit determining priorities and goals. Once these problems have been established, then a vigorous plan of action can begin.

II. The pasture or forage situation

One of the first jobs of the subcommittee, which should be done at least

The following list of practices or problems and recommendations may be helpful.

PRACTICE OR PROBLEM	RECOMMENDATION	PRESENT SITUATION		
		GOOD	FAIR	ATTENTION
Use of adapted plants	Use of plants best adapted to soil, moisture, temperature, livestock and management situation.			
Adequate temporary pastures	Adequate winter and summer temporary pastures to supply green grazing of good quality, to permit resting permanent pastures and rangeland, to provide some hay or silage and to provide soil protection.			
Planned seasonal grazing	Planned grazing programs that include enough acreage of each kind of pasture, each kind fenced and grazed separately, to provide the amount and quality of grazing needed.			
Proper establishment	Correct amount of good-quality seed, planted properly on the best seedbed at the right time, with the plants allowed to become well established before grazing.			
Proper fertilization	Use of the proper grade and amount at the right time for establishment and maintenance.			
Proper grazing and forage use	Avoiding overgrazing, rotating grazing where profitable or allowing regrowth following grazing, and when practical using growth not needed for grazing as hay or silage.			
Weed control	Managing pasture plants properly to allow them to compete with weeds, and using mower or chemicals as needed to control weeds.			
Proper use of irrigation	Proper preparation for irrigation, use of adapted plants with high production			

PRACTICE OR PROBLEM	RECCMMENDATION	PRESENT SITUATION NEEDS		
		GOOD	FAIR	ATTENTION
	potential and use of pasture management practices that will allow profitable pasture irrigation.			
Ample hay and silage reserves	Adequate hay and silage to substitute for or supplement pastures as needed.			
Pasture in crop rotations	Use of pastures as practical in rotation with other crops for soil improvement.			
Good livestock management	Proper management of livestock with good production potential to allow best returns from sound forage programs.			
Other list				

III. Pasture program plans

A. Plan of action

A plan of action should include a listing of the problems in the order in which they are to receive attention, short and long term goals and methods of procedure. This part of the listing will include plans for the kind and number of demonstrations needed, number and time of field days or tours and meetings and the kind and amount of publicity. Each subcommittee member should be assigned certain responsibilities. An idle committee is a dead committee.

B. Activity plans

Each planned activity, whether it be a result demonstration or a meeting, should be outlined in detail to avoid slip-ups. Such plans usually are quickly and easily made with the committee, and they are helpful in obtaining the desired results.

C. Pasture promotions

Following is a simple outline of plans for a county winter temporary pasture campaign. The same pattern, with proper

modification, could be used for other pasture or meadow practice promotions.

1. Subcommittee make final plans in early or midsummer.
2. Advise seed and fertilizer dealers of recommendations well ahead of planting time.
3. Hold county-wide or community meetings, in late summer and discuss:
 - a. Value of winter temporary pastures
 - b. Adapted grass and legume varieties
 - c. Fertilization
 - d. Seeding dates, rates and methods
 - e. Grazing management
4. Establish result demonstrations as needed on varieties, fertilization, grazing management and other practices.

5. Publicize thoroughly the recommendations as to varieties, fertilization, planting date, rate and method and grazing management.

6. Hold tours or field days when timely to show effective result demonstrations.

7. Publicize through all means available the results of the demonstrations and get pictures for use in future meetings and publicity.

D. Publicity

Full publicity should be given on the program when there is something to publicize. Use all means of communication--newspaper, radio, T.V., tours, field days, meetings, circular letters, leaflets, bulletins, personal contacts, etc. Eight to 10 methods are five times as effective as three or four.

IV. General suggestions for demonstrations

Demonstrations are one of the most effective methods of teaching. No substitute for them has been found in extension work.

A. The most effective demonstrations are:

1. Needed.

2. Planned in detail and discussed thoroughly with all concerned.

3. Placed with interested people who will care for them.

4. Located in an accessible place where they can be easily seen by many.

5. Well marked with demonstration signs.

6. Simple, with relatively few treatments that are labeled clearly.

7. Well publicized through all means available.

8. Photographed so results may be used in future meetings and publicity.

9. Included in field days or tours.

10. Harvested if the yield information will be useful.

B. Demonstration sites should be:

1. Easy to reach.

2. On uniform soil; if not, two sets of plots should be put in, or the demonstration replicated, to help offset soil variability.

3. At least 100 feet from fence-lines, rows or stands of trees or roadsides to avoid that source of variability.

4. On soil that is representative.

5. On soil that will give a good chance to demonstrate the point; for example, fertilizer demonstrations should not be located on land that has been highly fertilized or manured or on soils that are naturally very fertile.

6. Well marked.

a. Demonstration boundaries may be marked by placing laths in a fence, or they may be marked by wooden stakes placed where they will not be disturbed; if stakes must be sunk so that the tops are flush with the soil surface, their exact location with respect to stable landmarks should be determined and recorded.

b. Plot or treatment boundaries may be marked in the same manner.

c. A detailed record should be kept on demonstration location, design, plot layout, etc., along with other records on the demonstration.

V. Specific demonstrations

A. Adapted plant demonstrations

1. Small grass and legume nursery to show plant adaptation.

a. Most seed dealers will cooperate by supplying seed; pasture specialist will supply plant list and commercial sources of scarce seed.

b. Plant three or four rows, 15 to 20 feet long, to each variety to offset border row and adjacent plot effects.

c. Make plantings in 36 to 42-inch rows to allow cultivation for weed control.

d. Plant perennials in one group or block and annuals in another to permit easier land preparation for next planting of annuals.

e. Mow the plants before maturity to stimulate grazing and permit regrowth comparisons.

2. Strip demonstration to show differences between varieties of the same plant, such as alfalfa or oats, or to show differences between different plants, such as one or more varieties of oats compared to barley, rye and wheat, or Sudan compared to pearl millet and Sorghum alnum.

a. Most seed dealers will supply seed.

b. Drill or plant in 36 to 42-inch rows, depending on the crop.

c. Make strip width a minimum of eight rows or two drill widths.

d. Plant two or more strips to each variety or plant.

e. When the demonstration is grazed, it may be necessary to

remove the livestock as soon as the most palatable plant is grazed down to prevent overgrazing that plant and giving the others an advantage. When the livestock are removed, all the plants should be mowed to a uniform height and proper regrowth allowed before grazing is resumed.

f. To determine forage yields on grazed demonstrations, fence off one end, do not graze it and determine yields as outlined under the yield section, on page 7. The fenced area should be mowed each time the rest of the demonstration is mowed.

g. When the demonstration is harvested for hay or silage, these yields may be used, and hand harvesting to determine yields omitted.

3. Pasture mixture demonstration to show performance of several different grasses alone and in combination with different legumes.

a. Plots in this demonstration should be small when more than three grasses and three legumes are used. Minimum width should be one drill width.

	Grass A	Grass B	Grass C	No grass
Legume A				
Legume B				
Legume C				
No legume				

Demonstration layout.

b. Seed more than one block to each legume if soil variability is apparent.

c. Determine yields as outlined under the yield section, page 8. Or, the demonstration may be used strictly for observation.

B. Fertilizer demonstrations

1. Nitrogen topdressing

a. Apply uniform initial application according to soil test at planting for annuals and for warm-season perennials about the time they begin to make growth in the spring.

b. When the demonstration plot is to be grazed, it should be laid out in two blocks of 1 to 5 acres each, depending on the number of animals to be grazed. These blocks can be subdivided to allow rotation grazing.

c. If the demonstration plot is to be harvested for hay or silage, the topdressing may be applied following each cutting in two or more strips with at least two drill widths per strip.

d. Each time the area is grazed down, mow the grazed blocks to remove old growth, apply 30 to 50 pounds of N to one block if the soil is moist, and keep livestock out for 2 to 4 weeks to allow regrowth.

e. Results of the grazed demonstration may be measured in terms of grazing days per acre (No. animal units x No. days grazed ÷ No. acres). Cages may be used to allow clipping to determine yields, but caged areas must be clipped when the livestock are moved and the cages moved to a new spot after mowing.

f. Hay or silage yields are satisfactory on demonstrations not grazed, or the yields may be determined as outlined in the yield section, page 7.

2. Rate of fertilization

a. Fertilize one block according to soil test, one block at twice the rate recommended from soil test and a third block at half the soil test rate, at the rate used locally, or leave it unfertilized.

b. Strips should be at least two drill widths across.

c. Apply each treatment to at least two strips.

d. Use this demonstration for observation purposes only. Cages may be used to determine approximate forage yields, but the results may not be worth the trouble.

3. Fertilizer distributor calibration

a. Broadcast fertilizer distributors

(1) Equipment needed is a section of canvas 24 to 36 inches wide and long enough to extend the full width of the spreader, a scale that weighs to 0.1 pound, a 2-gallon bucket, a 100-foot steel tape and two stakes.

(2) Measure and stake a distance of 25 to 50 feet.

(3) Attach canvas below hopper openings to form a loop in which to catch the fertilizer, or the canvas may be held beneath the spreader by men riding it.

(4) Pull the spreader through the taped distance.

(5) Pour the fertilizer obtained into the bucket and weigh it, subtracting the weight of the bucket.

(6) Measure the width of the fertilizer hopper.

(7) Use the following formula to calculate the rate being spread per acre.

$$\frac{\text{(Lb. of fertilizer delivered) x (No. of sq. ft per acre)}}{\text{(Distance traveled) x (width of spreader)}} = \frac{\text{Lb. being delivered}}{\text{per acre}}$$

For example, if 3 pounds were delivered by a 10-foot spreader in 30 feet:

$$\frac{(3) (43,560)}{(30) (10)} = \frac{130,680}{300} = 435.6 \text{ lb. per acre}$$

(8) Adjust controls and repeat the above procedure until the desired rate is obtained.

b. Grain drill-fertilizer distributors

(1) Remove four tubes or down spouts from boots and attach paper bags to the spouts.

(2) Start operating distributor and pull drill through the distance indicated in Table 1.

Table 1.

Distance between drill rows (Inches)	Distance to pull drill (Feet)
7	187
8	164
10	131
12	109
14	94

(3) Weigh the total amount of fertilizer collected in the four bags in the travel distance indicated in Table 1. Each 1 pound is equivalent to 100 pounds per acre. One-tenth pound is equivalent to 10 pounds per acre.

(4) When one side of the distributor has been set, adjust the other side accordingly. If the other side does not appear to be putting out the same amount, adjust it separately by the method outlined.

C. Weed control demonstration on permanent pasture

1. This demonstration may be set up to show the value of mowing, effectiveness of 2,4-D in controlling weeds or to compare the effectiveness of the two methods. Two or more untreated strips should be left.

2. Mowed strips should be at least six swaths wide and sprayed strips at least 40 feet wide. Untreated strips should be of the same width.

3. Mow weeds when they are in the bud stage, except yankeeweed and other fall-blooming weeds, which should be mowed when other weeds are ready for mowing or by the time they are 2 feet high. Apply 2,4-D when the weeds are in the young, rapid growth stage - the younger the better.

4. Apply 1 pound of 2,4-D amine per acre in at least 15 gallons of water, with 1/2 to 1 cup of liquid detergent or commercial wetting agent or 1 1/2 to 2 pounds of dry detergent per 100 gallons of spray mixture.

5. Determine the amount of 2,4-D to add to the tank by spraying a

measured acre or by calibrating the sprayer according to methods outlined on page 18 of B-892, Weed Control in Texas Pastures.

6. Set up demonstrations for hay crops or temporary pastures, based on rates given in L-258, Winter Temporary Pastures.

D. Proper establishment demonstrations

1. Row versus close-drilled Sudan or pearl millet to show longer grazing season from row plantings

a. Each planting method should be used on at least 5 acres, if the demonstration is to be grazed and each block grazed separately.

b. Make row plantings in 36 to 42-inch rows.

c. Use this demonstration for observation purposes only.

2. Sod-seeded oats versus oats seeded on a prepared seedbed to show the advantage of each method

a. Seed an adapted variety of oats on a properly prepared seedbed at the proper time. See L-258. Sod seed the same variety, adjacent to the prepared seedbed where possible, as soon as the warm-season grass forming the sod is dormant.

b. Observe carefully and call attention to the date each planting is ready to graze, the number of days grazing furnished by each and the relative cost of establishment per acre.

E. Grazing management demonstrations

1. Rotation grazing versus continuous grazing

a. This demonstration should be attempted only with high producing pasture plants. It

will work best on temporary pastures.

b. Use two pastures of the same size, one divided into a minimum of four blocks to be grazed in rotation and the other to be grazed continuously.

c. Rotate livestock as needed on the divided pasture.

d. Add or take off animals as necessary to utilize forage or avoid weight loss.

e. Measure results in terms of grazing days per acre (No. animal units) X (No. days grazed) \div (No. acres).

F. Pastures in cropping systems

1. Plant cotton, rice or other crops following 3 to 5 years of permanent pasture.

2. Plant the crop following the same crop, such as cotton following cotton, on the same type soil and give both the same management.

VI. Measuring demonstration results

A. Estimating pasture and meadow yields on broadcast stands

1. The following equipment is needed:

a. A quadrat iron rod frame (3/8 inch) with inside dimensions of 3 x 3 feet. One end may be left open for easy entry into dense stands. A wooden frame could be used.

b. A hand sickle, a long-bladed knife or good shears.

c. A scale that weighs to 1/10 pound and a broom handle to support the scale.

d. A burlap bag cut down the seams to make a rectangle, with a cord tied to the corners to allow hanging it on the scale.

- e. Paper bags.
- f. String or cord.
- g. Tags on which to put information.

2. Most accurate method

a. Harvest three or more 3 X 3 foot areas from randomly selected areas within a plot or treatment.

b. Weigh and record green weight.

c. Place three handfuls of green material from each area in a paper bag and tie mouth to prevent moisture loss; take this sample to town immediately, remove it from the bag and weigh it on meat market or other accurate scales and record the weight; then spread the sample out to dry in a dry, well aerated place; when thoroughly dry, weigh the dry sample on the same scale and record the weight; then calculate the percentage of dry matter by the following formula:

$$\frac{(\text{Dry sample weight}) (100)}{(\text{Green sample weight})} = \text{Percent dry matter}$$

d. Then calculate the yield as follows:

$$\frac{(43,560) (\text{Weight of green hay in lb.}) (\text{Percent dry matter})}{\text{No. sq. ft. harvested} (2000)} = \text{Tons of air dry hay per acre}$$

e. Example:

Suppose three 3-foot square plots were harvested.

The total green weight harvested was 10 pounds.

The green sample weight was 1.0 pound.

The air-dry sample weight was .15 pound.

$$\text{The percent dry matter} = \frac{(.15) (100)}{(1)} = 15 \text{ percent}$$

The yield in tons per acre of air-dry hay would be:

$$\frac{(43,560) (10) (.15)}{(27) (2000)} = 1.2 \text{ tons per acre.}$$

3. Less accurate method

a. The number of plots harvested may be the same - with the green weight recorded.

b. One may assume a percentage of dry matter content - 15 percent for easily cured hay, such as Bermudagrass, and 20 percent for harder to cure materials, such as sorghum and alfalfa.

c. Calculate the yield of air-dry hay in tons per acre as described in "d".

4. Rough estimate - without quadrat

a. Harvest three or more 1/1000 acre plots (6.6' x 6.6') and record green weight.

b. Divide total green weight by the number of plots harvested.

c. Multiply the average green weight by 1,000 to get green weight per acre.

d. Multiply green weight per acre by estimated dry matter content to get air-dry weight per acre.

e. Divide the air-dry weight per acre by 2,000 to get tons of air-dry hay per acre.

f. Example:

(1) Suppose three 1/1000 acre plots were harvested and weights of 22, 18 and 20 pounds were obtained, and you estimate the dry matter content at 15 percent.

(2) $22 \text{ plus } 18 \text{ plus } 20 = 60$ divided by 3 = 20 lb. average green weight per 1/1000 acre.

(3) $20 \text{ lb.} \times 1000 = 20,000$ lb. green material per acre.

(4) $20,000 \text{ lb.} \times 15 \text{ percent} = 3,000$ pounds of air-dry hay per acre.

(5) $3,000$ divided by $2,000 = 1.5$ tons air-dry hay per acre.

4. Assume a percentage of dry-matter content as given in A, 3 and multiply by the estimated dry-matter content to get the air-dry weight per acre.

5. Divide air-dry weight per acre by 2,000 to get tons per acre.

6. If this method involves too much time and effort, reduce the length of the strips to be harvested by half, or even by 9/10, but be sure to multiply the yield by the amount of strip reduction to convert to a per-acre basis. Regardless of length of strip harvested, cut three randomly selected strips.

B. Estimating pasture yields on row plantings

1. Harvest and weigh the forage from three randomly selected 70-foot strips of row. Measure the distance.

2. Measure 210 feet across the planting. Place one end of the tape halfway between the rows and then count the number of rows in the 210 feet.

3. Multiply the weight of the forage obtained from the three 70-foot strips by the number of rows in 210 feet. This will give the pounds of green forage per acre.

VII. Demonstration reports

1. Results of all demonstrations should be recorded and filed for use. The record should be as complete as possible.

2. The sample report forms on the next three sheets should be helpful in giving a good picture of

a. Adapted plant demonstrations.

b. Fertilizer demonstrations.

c. Weed control demonstrations.

County _____

Year _____

Map legend No. _____

PASTURE OR MEADOW FERTILIZER RESULT DEMONSTRATION

1. Farmer's name _____ Address _____

Location _____

2. Variety _____ Planting date _____

3. Harvest date _____

4. Soil type (give series or describe) _____

5. Plot size and demonstration layout _____

6. Past cropping history (give at least two previous years) _____

7. Past fertilizer use (give at least two previous years) _____

8. Total rainfall during growing season (add comments on distribution) _____

9. Dates and amounts of irrigation _____

10. Soil test data: Laboratory number _____ pH _____ Organic matter _____

N _____ P _____ K _____ Ca _____ Soluble salts _____

Laboratory recommendation _____

11. Date and method of fertilizer application _____

12. General comments and conclusions: (the information you give here should include factors which may have affected the demonstration results such as rainfall, hail, insects, date of planting, stands, frost, poor distribution of irrigation water, soil variability, methods of harvest, etc.)

13. Treatments and yields:

Treatment	Hay yield per acre	Yield increase	Value of increase	Cost of fertilizer	Profit per acre	Return per dollar spent for fertilizer

County _____

Year _____

Map legend No. _____

PASTURE OR HAY VARIETY RESULT DEMONSTRATION

1. Farmer's name _____ Address _____
Location _____
2. Planting date _____ Planting rate _____
Harvest date _____
3. Soil type (give series or describe) _____
4. Plot size and demonstration layout _____

5. Past cropping history (give at least two previous years) _____

6. Past fertilizer use (give at least two previous years) _____

7. Total rainfall during growing season (add comments on distribution) _____

8. Dates and amounts of irrigation _____

9. Soil test data: Laboratory number _____ pH _____ Organic matter _____
N _____ P _____ K _____ Ca _____ Soluble salts _____
Laboratory recommendation: _____

10. Date, rate and method of fertilizer application _____

11. General comments and conclusions: (the information you need to give here should include factors which may have affected the demonstration results such as rainfall, hail, insects, date of planting, stands, frost, poor distribution of irrigation water, soil variability, methods of harvest, etc.) _____

12. Varieties or species and yields: (Report according to whether grazed or cut for hay.)

Variety or species	Hay yield per acre	Forage quality	Days grazing per acre (animal units x days grazed)	Lb. produced per acre	Lb. milk produced

County _____

Year _____

Map legend No. _____

PASTURE OR MEADOW WEED CONTROL RESULT DEMONSTRATION

1. Farmer's name _____ Address _____

Location _____

2. Crop _____ Varieties _____

3. Soil type (give series) _____

4. Past fertilizer use (give at least 2 previous years) _____

5. Moisture: Total rainfall during growing season _____

Dates and amounts of irrigation _____

6. Soil test data: Lab. No. _____ pH _____ Organic matter _____

N _____ P _____ K _____ Ca _____ Soluble salts _____

Laboratory recommendations _____

Date, rate and method of fertilizer application _____

7. Treatments and results: _____

A. Forage production rating prior to treatment (poor to excellent) _____

B. Forage plant stand rating prior to treatment (poor to excellent) _____

C. Weed stand rating prior to treatment (few, moderate or dense) _____

Treatment	Treatment date	Weeds treated	Stage of growth of weeds at treatment	% kill on weeds	% increase in forage yield after weed control	Cost per acre of weed control treatment

8. General comments and conclusions _____