Clover Seeding Madera Co.

INTRODUCED ANNUAL CLOVER DEMONSTRATION AND FIELD PLOTS

San Joaquin Experimental Range
1981-1986

Project Leaders:

Neil K. McDougald, Farm Advisor, Madera County
Jim Clawson, Extension Range Specialist, U.C. Davis

Project Cooperators:

Dr. Don Duncan, Range Scientist, PSWF & RES
Bud Kay, Specialist, Agronomy and Range Science, U.C. Davia
Bart Topping, Fresno State University

Previous Work and Justification:

Much work has been conducted on introduced annual legumes at SJER with limited overall success. Recent cooperative trials on the station utilizing newer inoculants indicated positive potential for this range improvement technique. Field scale investigations are the logical continuation of evaluation of this practice for future management use. Such a trial will provide information on the survival and productivity of the introduced clovers under association with resident plant species, plus provide an opportunity to compare beef cattle response from the improved field with a nontreated field.

Objectives:

1. Expand small plot results to field scale information for range management decisions (vegetation and cattle response).
2. Establish single variety plantings for comparisons.
3. Provide a demonstration area for educational uses.

Methods:

Pasture 42 (31.5 acres) is being used as the control area while Pasture 90 (60.5 acres) is being seeded in stages with annual clovers. Forage species composition, total forage weights and cattle performance information in both fields are being collected. Soil samples from the fields had an average pH of 5.4 and 13 ppm of phosphorus.

A. Materials

1. Seed (Pel-koted® seed provided by Ramsey Seed Company, Manteca, California)

1981 and 1982 Mixture	1983 Mixture
12% Nugarin subclover	12% Nungarin subclover
12% Woogenellup subclover	25% Woogenellup subclover
22% Clare subclover	25% Clare subclover

22% Seaton Park subclover
22% California Common subclover
25% Daliak subclover
13% Trikkala subclover

2. Fertilizer

a. "Super 25" (5% ammonic nitrogen, 20% phosphoric acid, 10% sulfur, and 13% calcium) in 1981 only.

b. Single superphosphate in 1983.

B. Seeding

1. 1981 Seeding

The preinoculated (Pel-Kote®) clover seed was drill seeded using a 5-foot range drill at a rate of 10 pounds of coated seed per acre. The fertilizer was drilled along with the seed at a rate of 200 pounds per acre. The seeding was done between October 28 and November 1, 1981. No significant precipitation occurred prior to seeding, but 1.1 inches fell during the time of seeding. Approximately 15 acres were drilled.

2. 1982 Seeding

The seed remaining from 1981 was reinoculated just prior to seeding. Five and three-fourths acres were contour-disked to 2 inches, broadcast seeded (using cyclone seeder) and cultipacked lightly on November 9. The seeding rate was 28 pounds per acre of coated seed. No fertilizer was applied. Rainfall prior to the seeding was 3.5 inches.

3. 1983 Seeding (see enclosed map)

Additional seeding at a rate of 10 pounds (15 pounds of Pel-Koted®) seed per acre was done in Range Unit 90 as follows on ~~November~~ Dec. 12-16 1993.
Rainfall prior to the seeding was ___ inches

Identification	Acres	Treatment
90-2	15	Overseeded the 1981 area with drill and single superphoshpate at 300 lbs/acre.
90-3	5 3/4	Drilled with no fertilizer (1982).
90-4	2 1/4	Broadcast with single superphosphate at 300 lbs/acre.
90-5	3 1/4	Drilled with single superphosphate at 300 lbs/acre.

4. Identification Plots

The following cultivars were broadcast seeded in the fenced SE corner of Range Unit 90 in 10' X 200' strips (see diagram). Rain occurred before covering seed.

Rose Clovers	Subclovers	
Hykon	Clare	Northam
Kondinin	Daliak	Nungarin
Common (Wilton)	Geraldton	Trikkala
	Howard	Woogenellup

C. Evaluation

1. Grazing Management

   a. Graze Fields 90 and 42 in a similar manner.
   b. Weight cattle on and off fields each time they are used.
   c. Determine stocking rates from existing field data and modify as necessary.
   d. Start with a split grazing program--early winter and summer. Specific times and duration to be determined by climate and seeding response.

2. Vegetation Measurements

   a. Cage locations

      1. Cages will be located on gentle slopes between swales and tops to represent mid-point production.
      2. Fifteen cages will be located in both fields at time of seeding.
      3. At the winter growth sampling the above 15 cages will be moved for the spring sample.
      4. Fifteen additional cages will be paired with those above for the dry sample.

   b. Forage to be described at two time periods (step-point procedures)

      1. Winter growth--mid-February to early March.
      2. Spring growth--early to mid-May.

   c. Residual dry matter recorded prior to new growing season.

   d. Data collected

      1. Soil samples--annually by site.
      2. Seasonal dry matter production.
      3. Utilize climate and IBP site data to characterize the specific year.

   e. Data storage and analysis.

   f. Technology transfer

      1. Annual progress reports
      2. Field days
      3. Publications -- newspapers, magazines, SRM, California Agriculture, etc.

Responsibilities:

Cooperative Extension:

1. Neil McDougald

   a. Explore sources of seeds (fertilizer if needed)
   b. Obtain and submit initial and annual soil samples
   c. Contact CSU Fresno for grazing ~~contribution~~ decisions
   d. Coordination and establishing dates and activities

e. Assist with data collection and evaluation
f. Assist and maintain cattle data

2. Jim Clawson

a. Project write-up(s)
b. Provide experimental rangeland drill
c. Seeding recommendation
d. Responsible for chemical and statistical analysis
f. Coordinate forage analysis

3. CSU Fresno (Bart Topping)

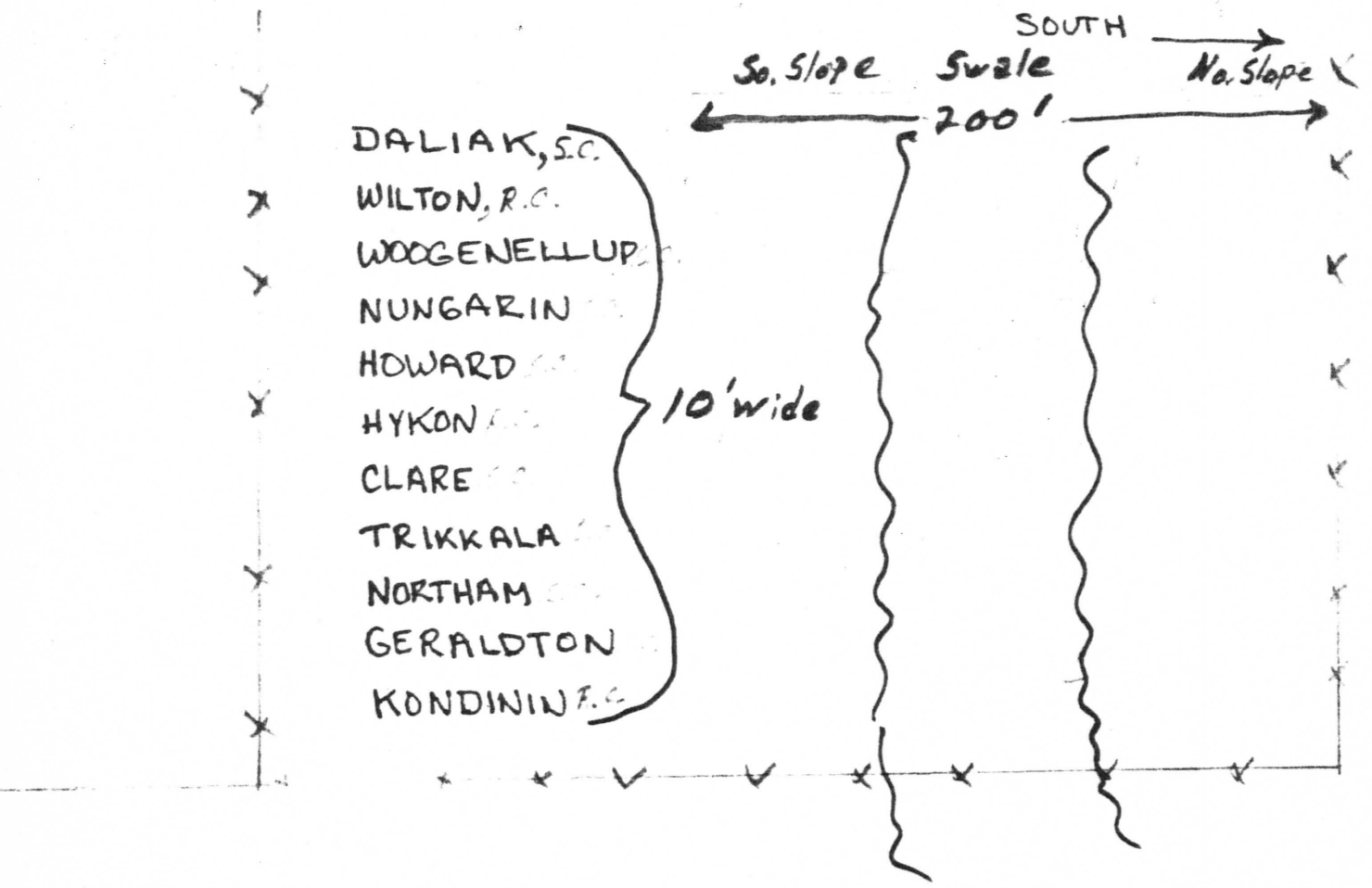
a. Provide cattle for grazing fields
b. Assist with periodic weighings

4. Advisers (Bud Kay and Don Duncan)

a. Advice and assistance when needed

SAN JOAQUIN EXP. RANGE
Dec 15, 1983

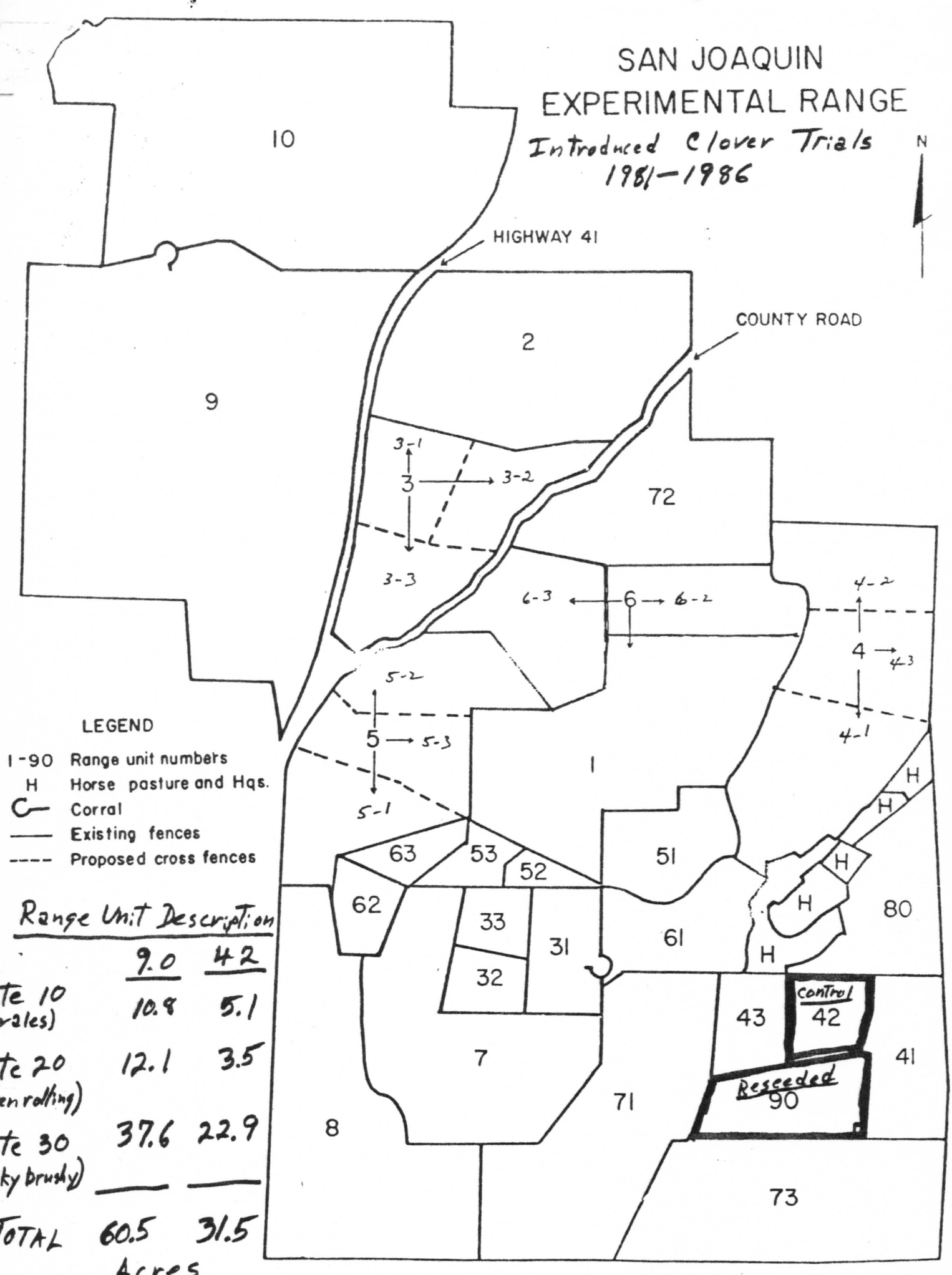
SUB CLOVER VARIETY
DEMONSTRATION -- S.E. Corner - Field #90



McDougald
Sands
Duncan (Advisor)

SAN JOAQUIN EXPERIMENTAL RANGE

Introduced Clover Trials
1981–1986



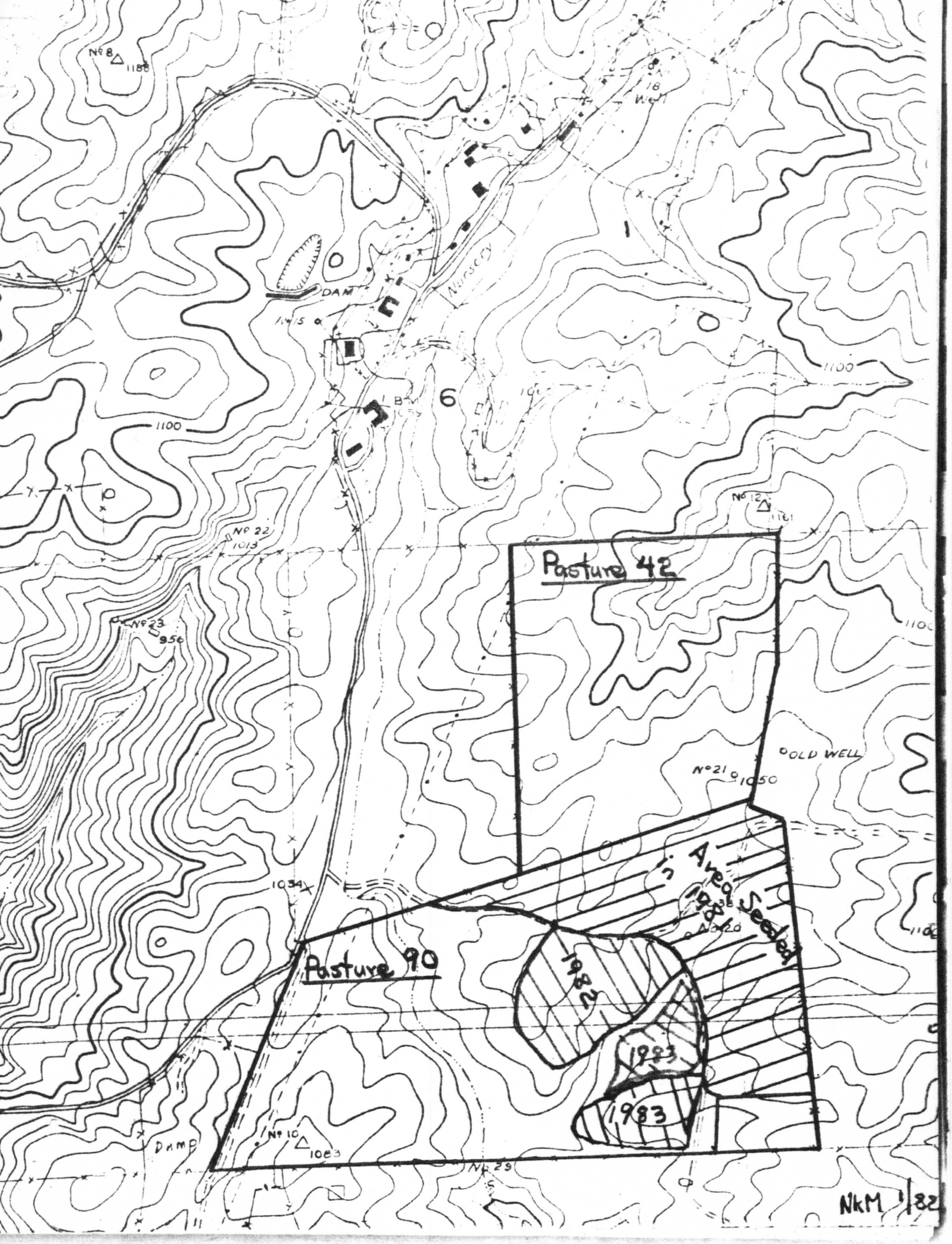
LEGEND

1-90	Range unit numbers
H	Horse pasture and Hqs.
C—	Corral
——	Existing fences
----	Proposed cross fences

Range Unit Description

	9.0	42
te 10 rales)	10.8	5.1
te 20 en rolling)	12.1	3.5
te 30 ky brushy)	37.6	22.9
	—	—
TOTAL	60.5	31.5

Acres


Pasture 42
Pasture 90
1 Acre Seeded 1982
1982
1983
1983
OLD WELL
DAM
DAM
Nursery
No 8
No 12
No 21
No 22
No 23
No 10
No 29
1100
1034
1013
956
1050
1083
NkM 1/82

1981 & 1982 Seedings

RAMSEY SEED, INC.

205 STOCKTON ST. MANTECA, CALIF. 95336

MIX. SAN JOAQUIN EXP. RANGE MIX LOT NO. 202-1

Purity %	KIND	Germination %	Hard Seed %	Total G.&H.S.%	Date Tested
11.93	*P.K. NUNGARIN SUB CLOVER	95	01	96	7/81
21.96	*P.K. WOOGENELLUP SUB CLOVER	92	00	92	7/81
21.97	*P.K. CLARE SUB CLOVER	90	03	93	7/81
21.75	*P.K. SEATON PARK SUB CLOVER	92	00	92	7/81
21.69	*P.K. CALIF. COMMON ROSE CLOVER	53	32	85	8/81
	*PEL-KOTED SEED EXCLUSIVE OF COATING MATERIALS.				

Crop Seeds .12 % | Inert 1.50 % | Weeds .08 % | Nox. Weeds .00 %

RAMSEY SEED, INC. warrants to the extent of the purchase price that seeds sold are as described on the container within recognized tolerances. Seller gives no other warranty, express or implied.

SAN JOAQUIN EXP. RANGE SHIP TO:

1983 Seeding

RAMSEY SEED, INC.

205 STOCKTON ST. MANTECA, CALIF. 95336

MIX. Special Mix LOT NO. 455-3

Purity %	KIND	Germination %	Hard Seed %	Total G.&H.S.%	Date Tested
12.39	* P.K. Nungarin Sub Clover	92	0	92	8/83
24.74	* P.K. Woogenellup Sub Clover	94	1	95	8/83
24.84	* P.K. Clare Sub Clover	80	5	85	8/83
24.90	* P.K. Daliak Sub Clover	91	0	91	8/83
12.43	* P.K. Trikkala Sub Clover	81	3	84	8/83
* Pel Koted Seed Exclusive of Coating Mat					

INTRODUCED ANNUAL CLOVER DEMONSTRATION

San Joaquin Experimental Range

PROGRESS REPORT -- AUGUST 1984

Background:

The attached revised project description describes the treatments to establish annual clovers in Range Unit 90. An additional 10 acres will be seeded in fall 1984. Evaluation to this point focuses on the establishment of the seeded treatments. Measured livestock use to date has been at a light intensity and there have been no differences between the control field (No. 42) and the seeded field (No. 90). With an increasing population of clovers and heavier use, livestock production differences shold become apparent.

Forage Evaluation:

Numerous visual observations were made during the winter growing season with a step point evaluation done only on May 2, 1984 with the following results:

			Percent Composition					Percent bare ground
					Clovers			
Field	Treatment	Number	Grass	Forb	Native	Rose	Sub	
42	Control	1	71	23	6	0	0	5
90-2	1981 + 1983	2	57	21	4	6	12	10
90-3	1982 - disk/broadcast	3	34	27	3	16	20	20-25
90-4	1983 - Duncan drill	4	63	24	4	2	7	5-10
90-5	1983 - disk/broadcast	5	40	38	7	+	15	35-40

Dominant grasses = soft chess, ripgut, foxtail fescue

Livestock Weights:

	2/8/84 in weight (lbs)	6/11/84 out weight (lbs)	Gain (lbs)	ADG (lbs/day)
Control - 125 days				
Cows - 6 head	778	940	163	1.30
Calves - 6 head	250	479	229	1.83
Seeded - 125 days				
Cows - 12 head	754	898	144	1.15
Calves - 12 head	240	462	222	1.77

Identification Plots:

The three cultivars of rose clover survived to set seed. Hykon appeared to be the most abundant on both the slopes and swale; while the Kondinin appeared only on the slopes and the "Common" in the swales. The subclover varieties did not become established that year.