# RANGE IMPROVEMENT ON JUNIPER-SAGE

## SHASTA-LASSEN INTERMOUNTAIN AREA

Juniper-sage occupies several thousand acres of productive land in the drier areas of Shasta and Lassen Counties. Carrying capacity for livestock is generally low on this type of brushland before improvement.

On the Norris Myer ranch, 640 acres of unimproved juniper-sage pastures yielded an average of 4,682 animal unit days per year for 1971, 1972 and 1973. The average grazing time per year was 98 days from approximately May 20 to September 1 and each acre provided 7.3 animal unit days per year.

The improved juniper-sage pasture on the neighboring Melvin Myer ranch produced 4,974 animal unit days on 110 acres from June 1 to September 3, 1973. Each acre produced an average of 45.2 animal unit days. This is six times more than the unimproved pasture.

In recent years livestock numbers grazing on public lands have been reduced and grazing fees have increased. This change has caused some ranchers to think more about improving their deeded land to feed their livestock.

Five ranchers in the Adin area provided information on converting juniper-sage to Intermediate wheatgrass and alfalfa. The ranchers decided that the bulldozing and heavy discing should be done by custom operators and the rancher would do the remaining operations. Cost of equipment to do other remaining operations would be spread over 1,000 acres and only portions of the entire ranch unit would be improved each year. Table I shows equipment needed and the various costs involved.

Table II shows the costs of converting juniper-sage to permanent grass and alfalfa. The conversion method used by most ranchers is to

remove the brush with dozer and brush cutter and disc plow during spring and early summer of the first year. The windrowed trees are generally left in place for improved wildlife habitat. Removing the brush and disc plowing conserves moisture and also prepares the soil for seeding in the early spring of the following year. Seeding time is usually in April. The drill with cultipacker attached, immediately follows the heavy disc. This type of operation prevents the soil from rapidly drying so the planted seed mixture will germinate. The mixture used by most ranchers is ten pounds of wheatgrass and two pounds of alfalfa.

In Table II the $47.81 per acre conversion cost seems high for range improvement on lands that are sometimes assessed for less than half that cost. The returns are economically favorable. At 15¢ per animal unit day, the pasture would be worth $6.78 per acre per year for the improved area and for the unimproved, $1.10 per acre per year.

Farm advisor test plots on the Melvin Myer ranch have shown remarkable increases in forage yields. Excellent stands of Intermediate wheatgrass and Vernal alfalfa on converted brush land produced two tons of air dry forage per acre - measured by clipping at ground level. When these test plots were fertilized in February with 200 pounds per acre of ammonia sulfate, the yield increased over three tons per acre.

Range improvement on juniper-sage lands looks especially feasible when one thinks of the future demand for beef and the increasing pressures to reduce domestic livestock grazing on public lands. The improved range should be productive for 15 years or more.

Studies at Squaw Butte near Burns, Oregon, on similar vegetation and climate, showed that when juniper-sagebrush was killed with 2-4-D, the area remained relatively free from brush encroachment for 17 years.

TABLE I

**Investment for** Improved Pasture
**(crop)**

**County** Big Valley, Lassen County **Date** March 1973 **Based on** 1,000 **(acres)** **of** Improved Pasture **(name of crop)** **on a** _____ **(acre)** **farm.**

| Item | Cost | Annual use (acres) | Cost per acre | Life (yrs.) | Depreciation | Interest | Cash costs per hour | | | Hours per acre |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Fuel | Repairs | Total | |
| 50 H.P. W.D. tractor | 9,000 | 1,000 | 9.00 | 10 | .90 | .32 | .42 | .88 | $1.30 | |
| Chopper 7' rotary | 1,000 | 1,000 | 1.00 | 10 | .10 | .04 | | .25 | .25 | |
| Disc plow 5 - 26" | 1,400 | 1,000 | 1.40 | 10 | .14 | .05 | | .75 | .75 | |
| Grain drill 8' | 1,840 | 1,000 | 1.84 | 10 | .18 | .06 | | 1.75 | 1.75 | |
| Cultipacker 10' (2) | 1,000 | 1,000 | 1.00 | 10 | .10 | .04 | | .30 | .30 | |
| Total | 14,240 | | 14.24 | | 1.42 | .51 | | | | |
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TABLE II

SAMPLE COSTS TO ESTABLISH IMPROVED PASTURE ON JUNIPER-SAGE BRUSH LAND IN BIG VALLEY AND FALL RIVER VALLEY

Shasta - Lassen

March 1973

Based on a 1,000 acre operation and skilled labor @ $3.50/hr.

Cash and Labor Costs

| First Year | | Cost Per Acre |
|---|---|---|
| Windrow trees with dozer | .4 hour (contract) | $ 8.80 |
| Chop sagebrush | .5 hour | 2.53 |
| Disc plow | .7 hour | 3.89 |
| Remove large rocks and limbs | .1 hour | .49 |
| Total | | $15.71 |
| **Second Year** | | |
| Disc | .5 hour (contract) | 6.00 |
| Drill seed | .5 hour seed 10 lbs. @70¢ drill & cultipack | 10.58 |
| Total | | 16.58 |
| Total cash costs for 2 years | | $32.29 |

Overhead Costs for the 2 Years

| | |
|---|---|
| Taxes | |
| First year land value @$10 at $7 rate | .18 |
| Second year land value @$100 at $7 rate | 1.75 |
| Miscellaneous cash overhead, interest on operating capital, office, etc. | 1.93 |
| Depreciation of equipment | 2.84 |
| Interest on land and equipment @ 7% | 8.82 |
| Total cost to establish pasture | $47.81 |

# 1981 BIG VALLEY RANGE TOUR

## Melvin Myers Ranch

Stop #1 The cinder pit range was planted in the spring of 1972. A good rainfall immediately after planting helped establish an excellent stand. The stand was not grazed the first season and garrying capacity in the second season was six times that of unimproved range. The alfalfa remained in the stand approximately four years.

## Ed and Dale Albaugh Ranch

Stop #1 The field on the east side of the road was established in 1953. Note the alternating rows of tall and intermediate wheatgrass and crested wheatgrass. The field on the west side of the road was planted in 1968. Neighbor Bob Nelson will talk about his adjoining wheatgrass field.

Stop #2 Sagebrush encroaching into the improved pasture stand on the east side of the road was killed with a rotary chopper in 1980. The pasture in the feedlot on the west side of the road was established with cattle in the field.

Stop #3 The field nearest the road on the west side was established in 1978. Further back from the road is a not-so-successful stand planted in 1980 with an interseeder.

Stop #4 This is an excellent rennovation of an old wheatgrass field done in 1980. A chisel plow was used to take out the old stand.

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## SUGGESTIONS FOR ESTABLISHING AN DRYLAND PASTURE

1. Plant 5-10 pounds of intermediate wheatgrass and 2-3 pounds of alfalfa Consider crested wheatgrass for shallow sites.
2. Burn, Bulldoze, and/or brushchop sagebrush and junipers from the site to be planted. If possible, wait 5-6 months for decomposition of roots and stumps to begin before disc plowing.
3. Disc plow the site and let it overwinter to decompose remaining trash and settle the soil.
4. In March or April disc the site pulling a harrow behind the disc; then immediately(preferably within hours to conserve moisture) drill the seed pulling a cultipacker before and after the drill.

15+1=16

30+1=31

# COSTS TO ESTABLISH DRYLAND PASTURE ON JUNIPER AND SAGE LAND IN BIG VALLEY

INPUTS

Skilled labor @$3.50/hr in 1973 and $5.00/hr in 1981
Cash Costs
60 hp wheel tractor using 2 gal/hr @$1.20/gal = $2.40
110 hp crawler using 7 gal/hr @$1.20/gal = $8.40
Custom Costs
Rent 60 hp wheel tractor @$30.00/hr
Rent 110 hp crawler @$50.00/hr
Seed Costs
10 lb/ac wheatgrass @$0.70/lb in 1973 and $1.00/lb in 1981
2 lb/ac alfalfa(included in wheatgrass cost in 1973)
@$1.75/lb in 1981

Costs for 1973 and 1981

| | Hour Requirements | 1973(1) Cash Costs | 1981(2) Custom Costs | a981(3) Cash Costs |
|---|---|---|---|---|
| 1st Year | | | | |
| Windrow Trees with Dozer | .4 | 8.80 | 20.00 | 3.36 |
| Chop Sagebrush | .5 | 2.53 | 15.00 | 1.20 |
| Disc Plow | .7 | 3.89 | 21.00 | 1.68 |
| Remove Rocks and Limbs | .2 | .49 | 7.00 | .48 |
| 2nd Year | | | | |
| Disc | .5 | 6.00 | 15.00 | 1.20 |
| Drill Seed and Seed Costs | .5 | 10.58 | 28.50 | 14.70 |
| Two years of taxes | - | 1.93 | 8.00 | 8.00 |
| Total | | 34.22 | 114.50 | 30.62 |

1) cash, labor, taxes, and seed costs.
2) custom rates, taxes, and seed costs.
3) fuel, labor for rock and limb removal only, taxes, and seed costs.

Net Returns for 1973 and 1981

| | 1973 Costs Estimate | 1981 Costs High Estimate | 1981 Costs Low Estimate |
|---|---|---|---|
| | 34.22 | 114.50 | 30.62 |
| Interest @7% for 8 years | 59.81 | | |
| Interest cost per year | 7.48 | | |
| Production of 1.26 AUM @$10.00 | 12.60 | | |
| Net Return | +5.12 | | |
| Interest @13% for 10 years | | 417.21 | 111.57 |
| Interest cost per year | | 41.72 | 11.16 |
| Production of 1.26 AUM @$20.00 | | 25.42 | 25.42 |
| Net Return | | -16.30 | +14.26 |