Planting to Reduce Deer Damage

deer show preference for Sweet Sudan and vetch
during tests with green summer forage for sheep

William M. Longhurst

Deer damage to plant crops in California is most severe where cultivated lands adjoin deer ranges—particularly in parts of southern California, the coast ranges and the foothills of the Sierra Nevada.

Deer proof fencing and chemical spray repellents have met with some success, but both of these methods are costly in material and labor.

To find a less expensive method of reducing deer damage, two planting tests were carried out during the past year at the Hopland Field Station in Mendocino County. Three strains of Sudan Grass, a planting of oats and one of oat and vetch mixture were tested.

A routine planting of Sudan 23 was made on April 17, 1952, to provide green summer forage for sheep. At one side of this field, two plots of one half acre each were planted, one to Common and the other to Sweet Sudan. Eighty-eight days later, on July 14, just before the sheep were turned in, the accumulated deer use was measured.

Measurements were made on three 100-foot line plots placed at random on each of the three strains of Sudan. A visual estimate of the degree of use was made on the plant closest to each foot mark along a 100-foot tape stretched along each plot. A total of 300 plants of each strain of Sudan were examined for use. Use was rated as 0 for No use; 1, Light use; 2, Moderate use; 3, Heavy use.

Counts of fecal pellet group density were employed as a cross check. This method has been used with considerable success by wildlife technicians in recent years to determine distribution of deer use. Through studies on penned deer it has been learned that the average rate of fecal pellet deposition is about 12.7 groups per day. Thus by counting pellet groups on 1/100-acre strips along the line plots an estimate of deer days use could be made.

Measurements of deer use were also made using this pellet group count method on a three-acre planting of Ventura red oats. Approximately one acre of this field was overseeded with common vetch. The planting was made November 6, 1951, and pellet counts were taken at three times, the last on June 11, 1952, just before the field was cut for hay.

Deer utilization of cultivated crops is known to vary markedly in different areas depending on the availability of natural forage, density of the deer population, and competition with domestic livestock.

Deer on the Hopland Field Station are of the Columbian black-tailed subspecies. There is some seasonal movement off the station to higher summer ranges from the latter part of April until the first part of August. Winter population density was estimated at approximately 80 deer per square mile and summer density at about 20 deer per square mile. Competition for natural forage with domestic sheep is considerable. The Sudan and the oat-vetch plantings were attractive sources of food during periods of natural food shortage so they received an abnormally heavy amount of use.

The numerical ratings for degree of use made it apparent that deer had taken the Sweet Sudan nearly 16 times as heavily as the Sudan 23. Use on Common Sudan was intermediate, averaging slightly over five times as heavy as the Sudan 23.

The pellet group counts had a rough correlation with these use figures. No pellet groups were found in the Sudan 23 plots, but the Common Sudan showed an average of five deer days per acre and Sweet Sudan, 52 deer days per acre.

Since the Common and Sweet Sudan were in one-half acre plots—planted toward the side of some 20 acres of Sudan 23—it is probable that what use did occur on the Sudan 23 was more widely distributed, as shown by the decrease in mean use of the Sudan 23, but the Sudan 23 was intermediate, averaging slightly over five times as heavy as the Sudan 23.

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In olive plants, lot sizes of less than 1,000 pounds—25% of actual lots fell in
this category—would mean time losses of
over 40% in typical plants. Average lots
of 3,000 pounds would mean an average
loss of 15%. Very large lots can be han-
dled efficiently, with average time losses
approaching 2%.

Costs

The major impact of the separate-lot
system on plant operating costs is caused
by the loss of effective working time, and
by the resulting reduced volume of fruit
handled per hour. In most plants, the
elimination of the separate-lot system
would permit only minor changes in the
working force—grower-tally girls for
packed fruit could be eliminated in fresh-
fruit packing houses, and the number of
men weighing and handling graded and
sized olives could be reduced in some
olive plants.

The lower table on page 14 summarizes
data on plant volumes and estimated
direct labor costs for the apple, pear, and
olive plants included in the study. This
table shows that the elimination of the
separate-lot system would result in in-
creases in the potential plant volume per hour.
The volume increases would be
small where the present system results in
small reductions in effective working
time, and large where present time losses
are large. Most plants would be able to
reduce the direct labor payroll per hour,
although these changes would be rela-
tively minor. The combined influence of
direct labor reductions and increased
volume per hour would be reductions in
average direct labor costs—exclusive of
packing labor and other piece-rate work-
ers—ranging from $0.13 to $1.09 per
thousand pounds of apples or pears, and
from $0.30 to $0.80 per thousand pounds
of olives. These costs of the separate-lot
system may not seem large but they may
be quite significant in terms of the total
volume of fruit handled by a plant in any
season. Moreover, the range in costs
emphasizes that many plants can improve
efficiency and reduce costs by adjusting
their separate-lot systems in order to minimize the loss in effective working
time.

DEPRECIATION

Continued from page 6

record aids in farm management and ac-
counting and is almost a must for farm
income tax reporting. The table on page
6 lists the usual lives and depreciation
rates for certain groups of depreciable
farm assets.

In accounting for income tax purposes,
farmers have the option of considering
certain development costs as current ex-
 pense or as capital outlay to be spread
over the useful life—of an orchard, for
example—in the form of depreciation.
There is a clear-cut line between what
is actually a capital outlay for an im-
provement—or piece of equipment usable
over a period of years—and what is
maintenance or repairs chargeable as
current expense.

Not all capital outlay is for a depre-
ciable asset. The original leveling of land
is a capital outlay considered to be per-
manent and not to be written off in the
form of depreciation. However, relevel-
ing to restore land to its previously level
condition can be considered as current
expense. Where releveling goes beyond
that and results in a better job than the
original, it becomes, in part, an ad-
ditional capital outlay and should be so
divided.

A capital and depreciation record
should provide for the listing by groups
of all individual depreciable farm assets.
Such a listing should show age, year ac-
quired, original cost, subsequent addi-
tional capital outlay, prior depreciation,
and for each year the remaining value,
added capital, estimated remaining life
and depreciation for the year. With such
a listing for any requested inspection only
one group totals need be inserted in the Farm
Schedule for Income Tax.

Arthur Shultis is Extension Economist in
Farm Management, University of California
College of Agriculture, Berkeley.

The California Farm Record Book contains
model forms of capital and depreciation records,
inventories and net worth statements. It may be
obtained for $1.00 from Agricultural Publica-
tions, 22 Giannini Hall, University of California,
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DEER

Continued from page 4

dispersed. Therefore, the figures obtained
from the plots were not strictly compara-
able. However, it is significant that deer
actually had to pass through Common
Sudan or Sudan 23 to reach the Sweet
Sudan.

Deer use on the planting of oats and
the oat-vetch mixture was heaviest dur-
ing the midwinter and spring months.
Pellet group density checks indicated rel-
atively little difference in utilization until
the late spring period after the middle of
April. Then as the oats matured there
was a definite shift to the end of the field
containing vetch. Deer preference for
legumes at this season and into the sum-
er is well known.

These tests are not precise, but they
do indicate that it is possible to plant
certain crops relatively less attractive to
deer than are other similar crops.

Sudan 23 is known to be less palatable
for livestock than Sweet Sudan but it pro-
duces up to 25% more feed than other
strains. This together with its low palata-
ability for deer makes it a good choice.

William M. Longhurst is Assistant Specialist,
Department of Zoology, University of California
College of Agriculture, Davis.

Oat and Vetch Plots

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<th>Date checked June 6, 1952</th>
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<td>300</td>
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<td>4</td>
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<td>1600</td>
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</tbody>
</table>

One deer day = 12.7 Pellet groups.

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Continued from page 6

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This part will also compare plant costs under
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