

Field Burning Limits Threaten Seed Quality In Willamette Valley

The Willamette Valley of Oregon is a majestic place, spires of stately, sharpened pines, rolling hills and brightness of life around it. It is life, to the people who are there, the scenic spell about it and the living it returns to its people through its renown \$65 million grass seed industry.

But as seed growers continue to sow their fields, they find their work becoming increasingly difficult, not from erratic climate or weather, or encroachments on their land, but rather outside pressure upon one most vital part of their industry — field burning.

From where the Oregon seed growers, suppliers and users sit, the view of open field burning is essential, but other organized forces in Oregon view it as more than a 'burning' issue. It has become a struggle that threatens to severely affect the state's dominance as a producer of exceptional turf seed. Here's why:

The Willamette Valley grows 217 million pounds of annual and perennial ryegrass annually, half of which could support over 3 million pounds of beef or 12 billion quarts of milk. Some 13 billion pounds of Orchardgrass and tall fescue grow in the state's rich soil. When combined with ryegrass, the seed could flourish over 7,205 square miles of turf. It's enough seed for 70 percent of the market, and employs 7,000 to 10,000 persons. Field burning makes much of this possible.

Field burning helps because it reduces insects and rodents in seeds, dispatches trash and destroys diseases while retarding their regrowth. It also rids the fields of unmarketable and unprofitable straw, destroys about 95 percent of the weeds in the winter annual grass that would otherwise reemerge in greater numbers, and shocks plants into production for the next season.

Burning is economically neces-

sary for seed quality control in a valley with great production potential, but it is the valley that started the fight.

It received widespread attention in the late 1960's with a series of climatological studies, according to Joseph P. Hennessey, Jr. and Charles D. Craig, authors of *The Field Burning Climatology of the Willamette Valley* for the Department of Atmospheric Sciences, Oregon State University.

One study by Holzworth (1971) featured seasonal statistics of field burning but lacked a temporal solution for the problem. Holzworth measured morning (urban) mixing heights, afternoon mixing heights, average surface wind speeds, and mean mixed layer precipitation. Although Hennessey and Craig's report notes the valley's frequent air inversions, atmospheric stagnation and greater susceptibility to urban air pollution, they cite Holzworth as giving estimates and possible over-estimates of data. But the study caught public imagination and the message appeared to be 'end the burning.'

Resulting legislation in 1971 banning open field burning was repealed in 1975. In 1975, SB 311, a harsher manacle upon industry, was passed. The bill prescribes law and guidelines for phasing out burning in favor of field sanitizing by machine or other means, and uses restrictions, burning quotas, registrations, watchdog groups and task forces for enforcement even though burning is carefully controlled, not done during inversions and usually lasts only four to eight hours per day. Seed is usually burned only 12 days in Polk, Yamhill, Clackamas, Marion and Washington counties out of an approximate 70 day season. Since smoke management started in 1970, figures for visibility less than six miles in Eugene is well below five



hours, according to information of the U.S. Department of Commerce. With this information, however, and increasing cuts into the numbers of fields for burning, the bill was passed.

• Under SB 311, as of July 1, 1975, all farmers intending to burn seed must first get a valid open field burning permit from the Department of Environmental Quality (DEQ) and a fire permit and validation number from the local fire permit issuing agency for a specific field on the day it is to burn.

• DEQ will offer the registra-



tion/application forms which are invalid until the grower pays his acreage fees and gets his validation number for each field on the burning day. Fees are \$4 an acre, up from \$3 in 1975 and will be \$5.50 an acre in 1977 and \$8 in 1978. These revenues fund the registration program, its records, and the state smoke management program. If a grower files too late and is to blame for his lateness, he could pay \$1 an acre and must have his registration approved by DEQ. Other fines are levied for violations, water pollution or intentionally burning fields

not approved for burning.

- Cereal grain crops may be burned only if the grower gives a signed statement under oath or an affirmation that the acreage for burning will follow with seed crops (other than cereal grains, hairy vetch or field pea crops) which require flame sanitation for proper cultivation.

- All growers, turf seed or cereal grain, must keep a copy of the burning permit at the burn site and keep it available for at least one year after issuance for possible inspection.

Farmer combining fescue for seed in Willamette Valley.

tion. All burning records should be kept this way.

- The DEQ will monitor burning and will not issue burning quotas once 195,000 acres (for 1976) have been burned.

- Allocations to growers will be given on first and second allocation process. First allocations are assigned according to the total acreage each grower has beyond 100 acres. A second allocation is awarded to each grower with over

100 registered acres based upon the grower's proportional share of the unallocated remainder of the 214,500 acre grower allocation. Fire district allocations follow the sum of all first allocations applied to growers within the district and the proportional district share of the unallocated portion of the 195,000 total burnable acres.

- The Department may adjust allocation of the 195,000 burnable acres made to fire districts but cannot transfer allocations on one-in/one-out basis after the 195,000 acres are burned. No fire district may burn beyond its quota allocation.

- As DEQ sets the number of daily burning, no burning may be greater than its decree for the marginal day except if the quota is 50 acres or less. At this time, a permit may allow burning in one field if the field isn't over 100 acres and if no other permit is given that day. Fifty acres quota districts may not get 50 acre permits on two consecutive days.

- The burning season is from July 1 to October 31 and may begin at 9:30 a.m. PDT under marginal conditions but no open field burning is allowed one half hour before sunset or may continue later than one and one half hour after sunset. Fire chief or his deput may change these hours to aid air quality.

- Marginal burning is rated as follows: marginal Class N burning is limited to: North Valley: one basic quota may be issued; South Valley: one property area quota for priority area burning.

- Marginal S conditions: North Valley: one basic quota may be issued in concordance with the following permits jurisdiction: Aumsville, Drakes Crossing, Marion County District 1, Silverton, Stayton, Sublimity, and the Marion County portion of the Clackamas-Marion Area burning. No field may burn on the upwind side of any city, airport or highway within a priority area.

- Priority areas are:

—in or within three miles of the city limits of incorporated cities having population of 10,000 or greater;

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Willamette Valley Suited For Grass Seed Culture

Oregon's Willamette Valley is the world's foremost producer of grass seed. Two important factors explain why — climatic conditions and soil. Fifty inches of rainfall during the winter and early spring, followed by dry summer months create ideal growing conditions on the heavy soils which are particularly well-suited for grass culture. Seed is produced from Oregon City in the north to Eugene in the south.

The Willamette Valley is the only area in the world where grass seed is grown commercially to such an extent as a primary crop. It contrasts to many areas where harvesting is dictated by favorable price.

The industry boosts the agricultural income of the state on the average of \$60 million, with goods and services purchased and used in producing and distributing seed likely to exceed \$500 million.

A minimum land requirement for an economically favorable operation to support a family unit is 800 acres, rented, leased or owned outright, with the price of land now varying from \$600 to \$900 an acre. This reflects about \$300 to \$500 higher an acre than 10 years ago. Machinery is also a heavy capital investment.

As for expenses, the cost of seed stock is minimal. Labor, facilities, equipment, fertilizer and other supplies are the major items, but farming without the right equipment to do the right work at the right time is risky business; economizing on fertilizer is faulty thrift.

Successful seed farmers try to schedule their operations five to seven years in advance. Bob Richardson at Willamette Seed & Grain in Shedd, Ore., adds: "Those who invest their time and money wisely can't economize on fertilizer or weed control and expect to realize maximum quality

— the way to real profit."

Oregon's world-wide reputation for high quality grass seed is due primarily to a seed certification program. To have a crop variety entered in the program, a written request is submitted a year prior to certification time. The seed must also have some attributes which makes it merit certification, as well as being distinguishable from other varieties. One of the preliminary steps in producing certified seed is an application filed with the county agent 60 days before planting. Each crop has its own application showing a variety, field, township, range, section, quarter and a map of the location. A five-year field history of crops grown is also listed.

The 60 day provision allows for sprouting time after which fields are inspected for contaminating grasses. Evidence of such grasses dictates a certification turndown putting the crop into a commercial classification. Of the 120,000 acres inspected last year, 4,147 acres were rejected.

The heart of the certification program is the seed testing laboratory located at Oregon State University in Corvallis. It is the only lab in Oregon which can test for certification and is operated under the School of Agriculture with Ed Hardin, an OSU faculty member, directing lab operation. While the lab does not actually certify, test results indicate the decision. From precisely measured samples, experienced personnel, using powerful magnification, separate grass seeds, weed seeds and inert ingredients to determine the percentage of purity and germination — basic facts required for certification. The seed grower pays a flat fee per field for extension service field inspections and lab work. □

—areas within one mile of airports serving regularly scheduled airline flights;

—areas in or within three miles of city limits of Lebanon;

—areas west side of and within ¼ mile of these highways: U.S. Interstates 5, 99, 99E and 99W.

—areas on the south side of within ¼ mile of U.S. Highway 20 between Albany and Lebanon, Oregon Highway 228 from its junction south of Brownsville to its rail crossing at the community of Tulsa.

To help ease the watchdog effort, 'skywatch' planes were set up by the bill.

Although the bill says, regional air quality control authorities are forbidden to regulate burning or perennial grass seed crops, annual grass seed crops and grain crops, it provides for the Oregon Field Sanitation Committee to replace the Field Burning Committee. The five member group, seated for four year terms, would represent two members of five nominated by the Oregon Seed Council, two representing the public appointed by the director of the Department and a fifth person appointed by the governor.

Its duties and powers would revolve about field burning, its alternatives, studies by outside agencies, contracts and establishment of air emission standards for alternatives. DEQ would oversee the committee enforce its rules and help fire districts with burning regulations. The bill also establishes two inspectors for spot checking fields during the burning season and stations a field burning program manager in Eugene, Ore.

Number of acres is also set — SB 311 allows not more than 235,000 acres to be burned in 1975; 195,000 in 1976 and 95,000 in 1977. In 1978 and each year later, the commission will study the bill's factors and may allow burning of no more than 50,000 acres.

Of 280,183 acres approved for burning, only 186,260 were burned in 1975, the lowest number since 1968. This is 82 percent of the South Valley and 76 percent of the North Valley, due to rain, wind direction



Mechanical sanitizer, one alternative to open field burning, shown in operation. Several kinks must be worked out before it becomes a practical replacement.

and other atmospheric factors. The later the season, the fewer the proper burning days.

There were 761 complaints of smoke in 1975, according to DEQ statistics, down from 1198 in 1974. The all time high was 5142 in 1968 and low of 144 in 1967, but less burning failed to improve air, DEX noted, and accounted for only 20 percent of all smoky days. Much of what Eugene complains about is actually skag burning and city pollution, not field burnings.

By comparison on an annual basis, field burning in 1973 produced 1,050 tons of nitrogen oxides a year, no sulfur oxide tons and 8,404 tons of particulates while slash burning produced 2,154 tons of nitrogen oxides, no tons of sulfur oxides and 9,705 tons of particulates. Motor vehicles emissions yielded 70,179 tons of nitrogen oxides per year, 2,499 tons of sulfur oxides and 4,122 tons of particulates.

Regardless of the gains the bill's supporters have made for their cause, SB 311 is taking a severe toll upon Oregon's home-based industry with a yet unforeseen effect upon the state's precarious economy, high unemployment and its relationship with the foreign market. The situation is bringing in greater competition from the outside, with new

problems for worldwide grass seed.

Denmark is a heavy competitor, levying a steadier business in orchardgrass and perennial ryegrass for U.S. customers. Canada deals in a fine fescue and red creeping which has concerned Oregon business annually. so does England, New Zealand, Poland, Argentina, Chile and Holland.

As Japan concentrates upon producing finer strains of turf-grasses, it is estimated that 35 percent of all forage grasses, mainly ryegrasses and orchardgrass, will come from Japan by 1980.

Economically, the restrictions on open field burning costs Oregon \$22,884,000 at the farm gate, a 35 percent decrease in 1973 markets. Only 209,000 or 285,000 acres produced seed with added burdens of till and no-till methods. No-till of ryegrass costs \$15.74 a hundred acres but tilling is \$18.26. Orchardgrass alone costs \$25 a hundred pounds but in Denmark alone it receives a \$12.50 subsidy per hundred pound from the European Economic Community Government. Oregon growers pay a tax to burn, a situation that the Weed Council believes will force them to import inferior Danish orchardgrass by 1977.

Europe tends to lose, too, since some countries send their seeds to

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Turf Herbicide Report

Augustine grass, dichondra, carpet-grass, or clover lawns.

Chemically, it is 49.4 percent dimethylamine salt of 2,4-dichlorophenoxyacetic acid.

Monsanto, St. Louis, Mo., manufactures Roundup herbicide which can control annual bluegrass, lambquarters, common ragweed, crabgrass, downy brome, panicum, field sandbur, fleabane, fox-tail, ragweed, kochia, Pennsylvania smartweed, prickly lettuce, redroot pigweed, Russian thistle, smooth pigweed, shattercane, velvetleaf, and volunteer wheat, Bermudagrass, Kentucky bluegrass, Canada thistle, common mullein, curly dock, dallisgrass, fescues, field bindweed, johnsongrass, hemp dogbane, milkweed, paragrass, quackgrass, swamp smartweed, and vaseygrass.

Its active ingredient is 41 percent isopropylamine salt of glyphosate.

SEED BURNING *from 14*

Oregon for reproduction. This market may dry up for the state now that Europe markets won't accept seeds not meeting certification. Without open field burning, Oregon

has a much more difficult time getting highest quality seed.

Since stringent laws hampered burning, only 5,339,000 pounds of seed were produced in 1975, 78 percent of the 1974 market and the lowest number since 1969.

Yet foreign producers aren't sitting easily, either. Japan still has serious problems with ergot, a dilemma Oregon controls through burning. Other countries, as Dr. Fred Grau of the Pennsylvania Turfgrass Council, Inc., notes, tend to market seed with such negative elements as "unidentifiable, undesirable varieties, too many weeds not seen before, new diseases and too much inert matter" due to their climates. "One bag of weedy, low quality seed, once planted, will take years to correct," he says.

The seed growers worked hard. They met with Oregon Governor Robert Straub although he withholds support for them until they show they are "making an all-out total effort to find an alternative solution." Under SB 311, he may suspend the bill in case of hardship or disease and similar catastrophes or may suspend burning entirely. But the Governor said he believes growers pursue open field burning as least resistance and economic opportunism, and have not researched alternatives properly. Oregon seed farmers heartily refuted this and refer to \$531,000 of \$954,826 of their budget spent for sanitizing research. Council member Scott Lamb points out they paid for a straw cubing plant and appointed a five man committee to study straw cubing and briquetting.

Some farmers pay to \$90,000 for their own straw machinery. They donate and haul straw to experimental plants for free but still face problems. The best one farmer could do was three acres an hour with very low moisture condition, significant emission and after burn from his \$35,000 investment. It required alterations to reach satisfactory smoke control and acreage production (he never reached both at the same time), and his neighbors asked he return to field burning since it circulated smoke higher into

the air than the low slung machine emissions. Willamette Valley pays \$1.4 million to burn and \$1.2 million on straw equipment for straw that costs \$12 to \$15 a ton. One acre produces two tons of straw.

Under SB 311, farmers must apply for permits to use pilot field sanitizers, show design plans and specifications, acreage and emission performance notes and rated capacities with their applications. They also must produce details regarding availability of repair service, replacement parts, operational instructions, a letter of approval from the Field Sanitation Committee and emission standards for approved field sanitizers.

The sanitizers must prove abilities of cleaning a harvested grass field or cereal grain stubble with an accumulation of straw and stubble fuel load of not less than one ton an acre, dry weight, with average moisture not less than 10 percent, at a rate of not less than 85 percent or rated maximum capacity of a period of 30 continuous minutes. It cannot exceed these emission standards; 20 percent average capacity out of main stack; leakage not to exceed 20 percent of the total emis-

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FIELD BURNING

sion and no significant after-smoke originating more than 25 years behind the operating machine.

Once approved, acres burned by approved field sanitizers won't app-

ly to open building acreage allocation or quotas but will operate under either marginal or prohibition conditions.

In the direction of burning, Ore-

gon seed farmers hope to use 'the big burn' of five square miles of seed liner in one block, lighted scientifically on a good burn day for maximum combustion, a minimum of smoke and maximum lifting.

The seed growers are challenging the validity of parts of SB 311 in a class action suit filed in Marion County Court recently. They are asking the suspension of the 195,000 acres quota be lifted but are not now protesting the \$4 an acre burning tax. The defendants are the State of Oregon and the Director of DEQ, Loren Kramer.

Two Lane County residents have also named six seed growers in a suit which technically involves all growers in Lane, Lynn and Benton Counties. This class actions suit was recently granted a change of venue from Lane to Deschutes County and is scheduled for late July in Bend, Ore.

It falls into a summer of uncertainty for the Oregon seed growers, into prime burning time as aphids and aphid-related virus infestations attack cereal fields and the fields lack many defenses. □

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