

total cost of the control practice.

As with any tool, this model's effectiveness lies in the hands that use it. The expert range manager will make the key inputs such as productivity increase estimates, cost estimates, etc. Then he will determine what percent of that total increased production should be consumed and what the consumption pattern should be to allow for variability of seasons. It is hoped this tool will help structure the data which he must consider.

Special Explanation

Tebuthiuron is marketed by Elanco Products Company as Graslan and is cleared for control of more than 40 brush species.

Graslan is a unique formulation of high-density clay

pellets that are aerially applied through a patented, positive metering device. The clay pellets minimize chemical drift and increase application accuracy.

Once applied, Graslan is activated by rainfall and absorbed by the plant root system. The chemical is translocated throughout the plant, gradually killing it by inhibiting photosynthesis.

Complete kill may take up to 2 years, but since both roots and tops are killed, root resprouting is virtually eliminated.

Elanco encourages good range management and recommends deferred grazing on treated acres for maximum forage regrowth.

Graslan is available in Oklahoma, Texas, New Mexico, Arizona, and Kansas. The product is applied by specially trained and equipped applicators for optimum results. ●

Pesticide Certification and Range Managers

P.C. Martinelli, J.A. Young, and R.A. Evans

The first federal legislation governing the use of pesticides was the Federal Insecticide, Fungicide, and Rodenticide Act of 1947. This act is commonly referred to by the acronym "FIFRA." This law was administered by the U.S. Department of Agriculture. In 1970, the Environmental Protection Agency (EPA) was established and this agency took over administration of FIFRA. The basic law was amended in 1972 by the Federal Environmental Pesticide Control Act. It was first called by the acronym "FEPCA," but is now called "FIFRA," as amended. This 1972 amendment established the concept of restricted use pesticides. The law was again amended in 1975 and 1978.

Restricted use pesticides are those that are inherently dangerous to the applicator or can cause damage to the environment even when applied according to the directions and for the uses for which they are registered and so labeled. In order to apply restricted pesticides, applicators must be certified. The EPA allows various state agencies to administer the certification program as long as the state regulations are as restrictive or more so than the Federal law.

There are two classes of certified applicators: private and commercial. Private applicators include ranchers who apply pesticide to land owned and/or rented by them or their employer. Commercial applicators include all others such as range managers employed by public land management agencies.

Certification to apply restricted use pesticides is obtained by successfully passing a comprehensive written examination. The examination includes a general section on pesti-

cide safety and application that all candidates for certification must pass. Besides the general test, there are a number of specific category examinations that the candidates may elect to take to meet their specific job requirements. These categories include the option of agricultural pest control, plant or animal, which covers the activities of most range managers. The other specific categories offered for certification may vary from state to state depending upon the needs for pesticides in the states. In Nevada, other options offered include: (a) ornamentals and turf, (b) forestry, (c) seed treatment, (d) aquatic, (e) right-of-way, (f) industrial, (g) public health, (h) fumigation, (i) mosquito, (j) predator pest control, and (k) institutional and industrial.

The list of restricted pesticides has not been finalized, but the program functions with a list which has been increased annually since 1978. The current list for Nevada consists of 44 materials, most of which are insecticides. The only herbicides on the list are paraquat and picloram, both of which have valid uses on rangelands. Paraquat has EPA registration for rangeland use. Picloram is registered for range weed control uses on an individual state basis.

The two herbicides illustrate the reasoning behind the program. Paraquat is deactivated as soon as it reaches the soil surface so it has no persistent or accumulative effect in the environment. However, paraquat is a material highly toxic to mammals. Picloram has a very low mammalian toxicity, but it is very phytotoxic and can persist in the environment. Several valuable crop species can be damaged by picloram residues, even at very low concentrations of the herbicide. Picloram is the most widely used herbicide for control of junipers on rangelands.

Range managers are often concerned with vertebrate pest

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control and most pesticides used for vertebrate pest control are on the restricted list. These include strychnine, sodium fluoroacetate (1080), and zinc phosphide. In Nevada, the use of baits treated with 0.5 per cent strychnine and applied below ground level are not restricted. In contrast, the use of 1080 requires a special state permit beyond the certification program. Pesticides that are not classified as restricted are considered general use pesticides, but are still regulated by Federal laws.

The certified applicator law has teeth. Unlawful acts that are considered to be accidental are subject to \$5,000 civil penalties for each offense for commercial applicators. Knowing violations by commercial applicators are subject to criminal penalties of a \$25,000 fine plus 1 year in jail for the violation.

The program is controlled at the point of purchase of the restricted use pesticide. The certified applicator must show proof of certification to purchase the material or the dealer must inform the state regulatory agency of the sale. The certified applicator must keep records of how and where the restricted materials were used. These records are subject to review by the regulatory agency and the certified applicator must account for the proper storage, use, and container disposal as required for the specific material.

In many states, the EPA has financed special training programs for would-be certified applicators. All range managers

should take advantage of these schools. Even if you do not plan to apply restricted pesticides, the training program, if properly developed and presented, can be an extremely valuable refresher program for general use pesticide applicators. The safety program should be a must for everyone who uses pesticides, including hanging no-pest strips in the office.

The vast majority of pesticides used for range improvement are general use materials not covered by the certified applicator program. The concept of a meaningful, intensive training program for the use of these materials should prove very valuable for range managers with public agencies and for ranchers. If a restricted material has a valid use on rangelands, do not automatically reject the material just because it is restricted. Learn how to safely handle and use the material.

The restricted and general use pesticide laws are not the only regulations governing the use of pesticides on rangelands. For example, the transportation of pesticides is regulated by the U.S. Department of Transportation and the disposal of empty containers is regulated by State Environmental Protection Agencies.

The program of training and certification for pesticide applicators is very worthwhile. All range managers should be aware of this program and take advantage of the training when it is offered. ●

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