In Brief:

Niagara Chemical Division of FMC Corporation has developed a urea-carbamate compound which shows high promise as a soil sterilant for railway, utility, and highway rights-of-way and for industrial sites. The new broad spectrum herbicide, designed specifically for non-crop uses is in the final trial stages and will be test marketed for one year. WEEDS TREES AND TURF magazine presents in this October, 1968 issue a complete report on the new product.

In Final Testing Stages for Non-Crop Uses

New Broad Spectrum Herbicide

DEVELOPMENT of a broad spectrum herbicide that demonstrates high effectiveness as a soil sterilant for railroad, highway and utility rights-of-way, industrial sites, and non-crop farm areas has been disclosed by FMC Corporation's Niagara Chemical Division.

The material, substituted urea-carbamate compound that combines the recognized herbicidal activity of each of these molecular structures, has received an experimental permit that allows test marketing for a period of one year. Under development for the past four years, it is expected to receive full registration during the current year.

Called Tandex™, the herbicide is distinguished by its ability to control a wide spectrum of weeds, including woody species, and its low order of toxicity. It can be applied as either a preemergence or postemergence treatment to combat annual and perennial broad-leaved weeds and grasses as well as woody species.

Formulations:

In its final testing stages, Tandex herbicide is available as an 80% wettable powder (80WP) and as a 4% granular (4G). The wettable powder can be applied in either water or herbicidal oil. Oil or oil-water mixtures are preferred over water where rapid contact kill of vegetation is desired. Addition of a wetting agent at levels up to 1% has also been found to increase the contact activity.

Biological Activity:

Although the new herbicide is primarily absorbed through the roots, it is also absorbed slowly through the foliage. Optimum results have been achieved when sufficient moisture was available after treatment to carry the material into the root zone.

Weeds may still appear after preemergence application, but they soon become chlorotic and the foliar tissues subsequently dessicate and die. Woody species may bear some leaves after treatment, but they also gradually become chlorotic and die. Postemergence applications have been found most effective when applied to rapidly growing weeds or brush.

Soil Sterilization:

As a soil sterilant the new herbicide appears most promising for use along railroads, highway shoulders, under asphalt or cement roads, runways, parking lots within military installations, tank farms, industrial sites and in non-crop farm areas.

Tandex 80WP has been effective as a wettable powder or granular formulation in controlling a broad spectrum of annual broadleaf weeds and grasses at a rate of 2.4 to 4.8 pounds active ingredient per acre. It has been

New broad spectrum herbicide, Tandex™, was applied along this industrial fence in Oildale, Calif., to control annual broadleaf weeds and grasses. Plot in foreground was treated with 7.5 lbs. per acre of Tandex 80WP. Plot behind it was treated at 3.75 lbs. per acre. Application was made in March, 1966. Photo was taken in May, 1967.

applied at 5.6 to 9.6 pounds active ingredient per acre where fibrous-rooted perennial weeds predominate. A rate of 12 to 24 pounds active ingredient per acre may be required to provide long term residual control of perennial weeds having extensive underground rootstocks. The higher levels of dosage ranges are needed for soils high in clay or organic matter or where existing weed growth is approaching maturity.

The use of sterilant herbicides frequently involves an initial treatment followed by annual applications at lower dosages to maintain vegetation control. On areas containing diverse weed populations, Tandex 80WP has been successfully employed at from 10 to 15 pounds per acre the first year, 6 to 8 pounds the second year, and 3 to 4 pounds in subsequent years. Higher application rates are necessary for use on areas predominantly infested with deep-rooted perennial weeds on heavy soil-types and in areas subject to high rainfall.

Brush Control:

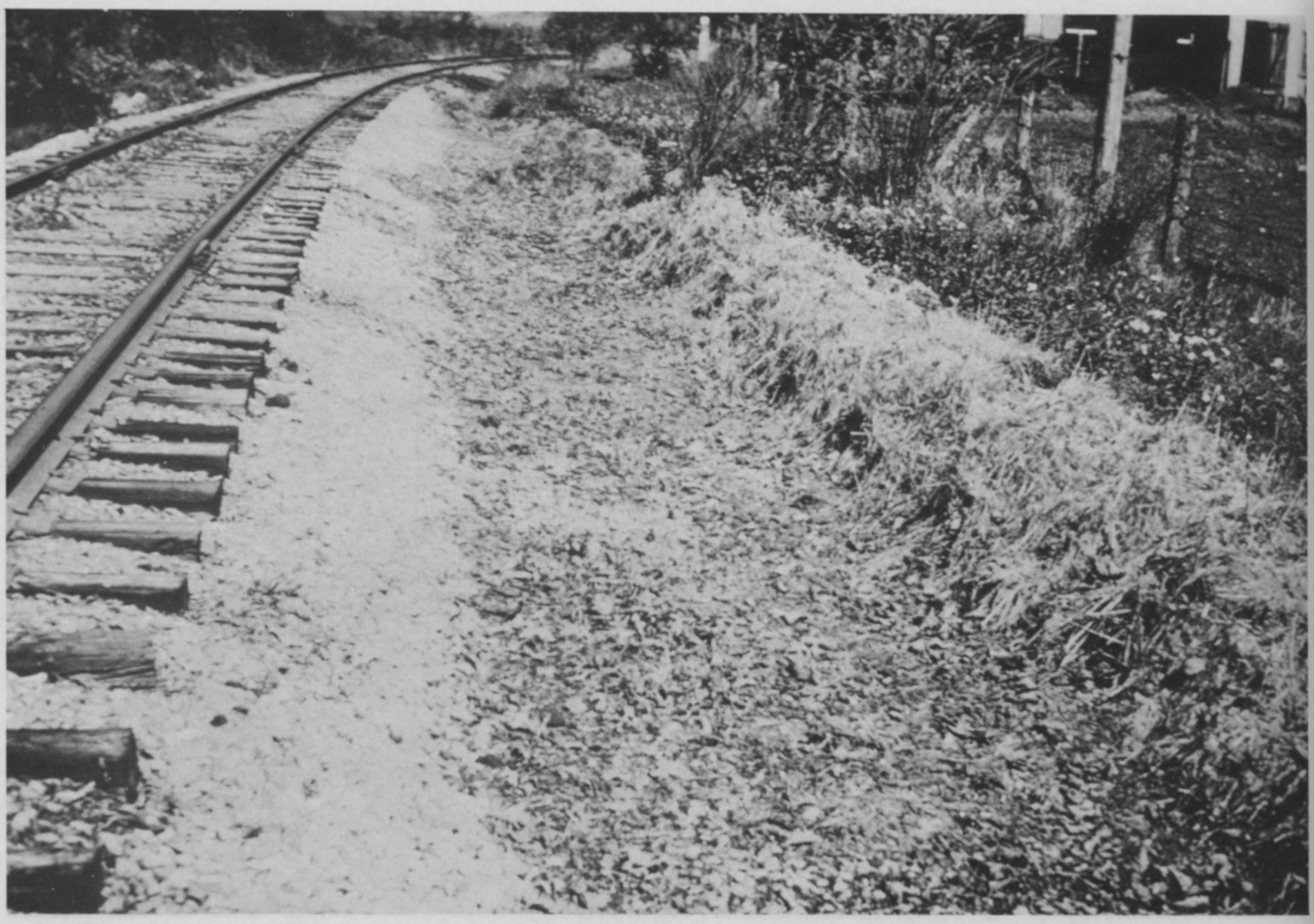
To control brush along rights-of-way, fence rows, and other non-crop areas, where an understory of sod is not to be completely eliminated, a 3-pound rate of Tandex 80WP (plus surfactant) per 100 gallons of water has been sprayed on the foliage. When applied at full-foliage time, this treatment controlled a wide variety of brush species, including conifers and maples, both of which are difficult to control with 2,4-D and 2,4,5-T or their combinations.

Excellent control of hardwood and coniferous brush species has been noted with the use of foliar sprays containing 1.5 pounds of Tandex 80WP combined with 2-pound acid equivalents of a mixture of 2,4-D and 2,4,5-T esters per 100 gallons of spray in areas where dangers from the toxic vapors of the phenoxy compounds do not exist.

Basal soil treatment with a 10% granular form at rates of 1 to 5 ounces formulated material per shrub has provided good control of interior live oak and California scrub oak. Granules were scattered evenly around the base of shrubs within the drip line. Broadcast applications at 10 to 20 pounds active material per acre have resulted in good control of interior live oak and yerba santa and have given complete vegetation control in firebreak areas.

Treatments:

Label directions in the permit



Annual, perennial, and woody weed species along this Maryland right-of-way were treated in June, 1967, with Tandex 4G at 350 pounds per acre (14 lbs. actual). Picture was taken in October, 1967.

issued for experimental use of Tandex recommend that application of either the wettable powder or the granular be made just before or during the period of active growth of the weeds to be controlled. For best results, sufficient moisture from rainfall or artificial means is necessary after application to carry the chemical into the root zones.

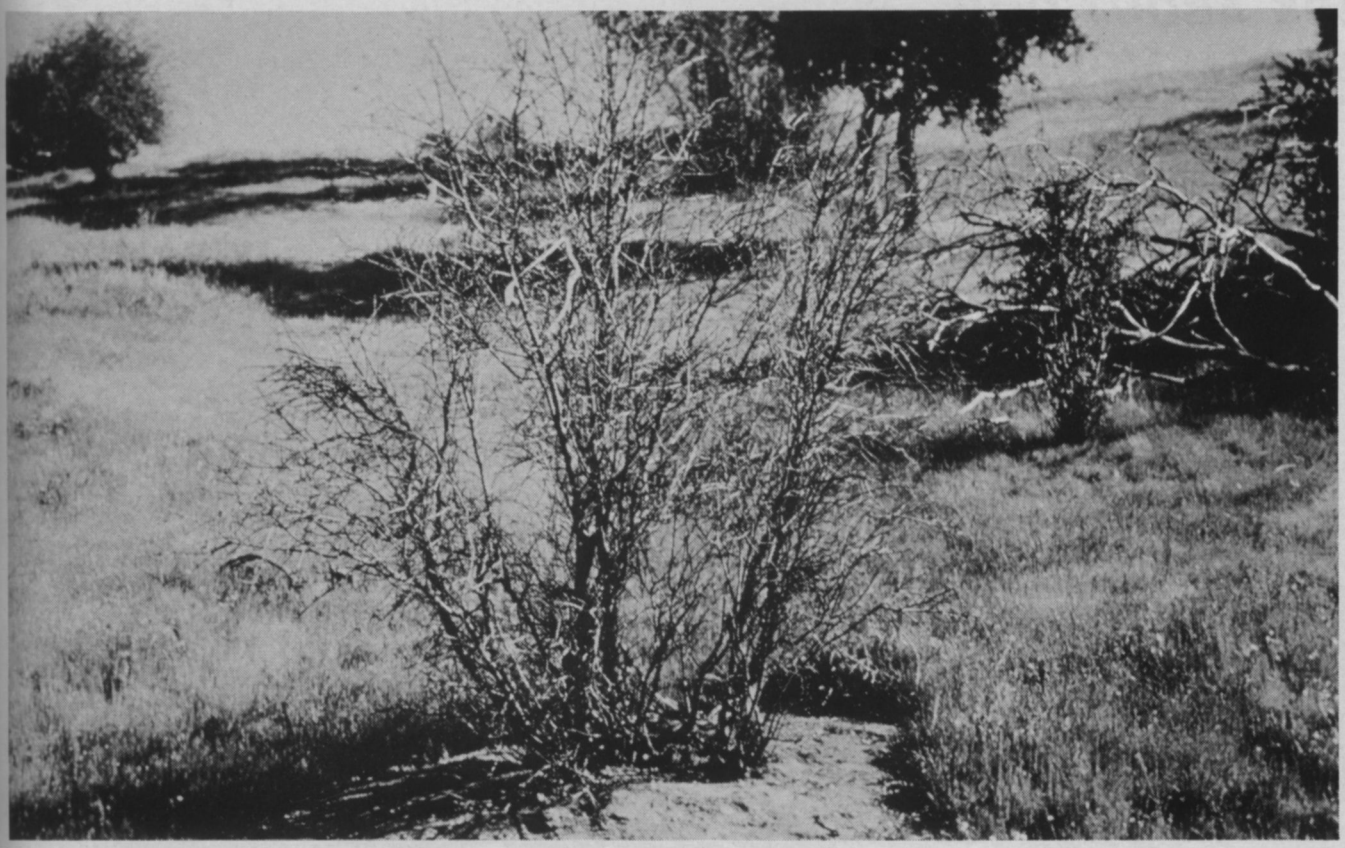
A dosage of 3 to 6 pounds of Tandex 80WP or 60 to 120 pounds Tandex 4G per acre is suggested to control: barnyardgrass, bromegrass, bluegrass, buckhorn plantain, cheatgrass, crabgrass, cinquefoil, clovers, cheeseweed, dog fennel, fiddleneck, foxtail, lambsquarter, pigweed, puncture vine, purseland, ragweed, smartweed, sudangrass, thistles, and turkey mullein.

A rate of 7 to 12 pounds of Tandex 80WP or 140-240 pounds of Tandex 4G per acre is suggested to control bindweed, brambles, docks, gumplant, ground cherry, Canada thistle, horsetail, milkweed, nettles, quackgrass, sheep sorrel, velvetgrass, and western ragweed.

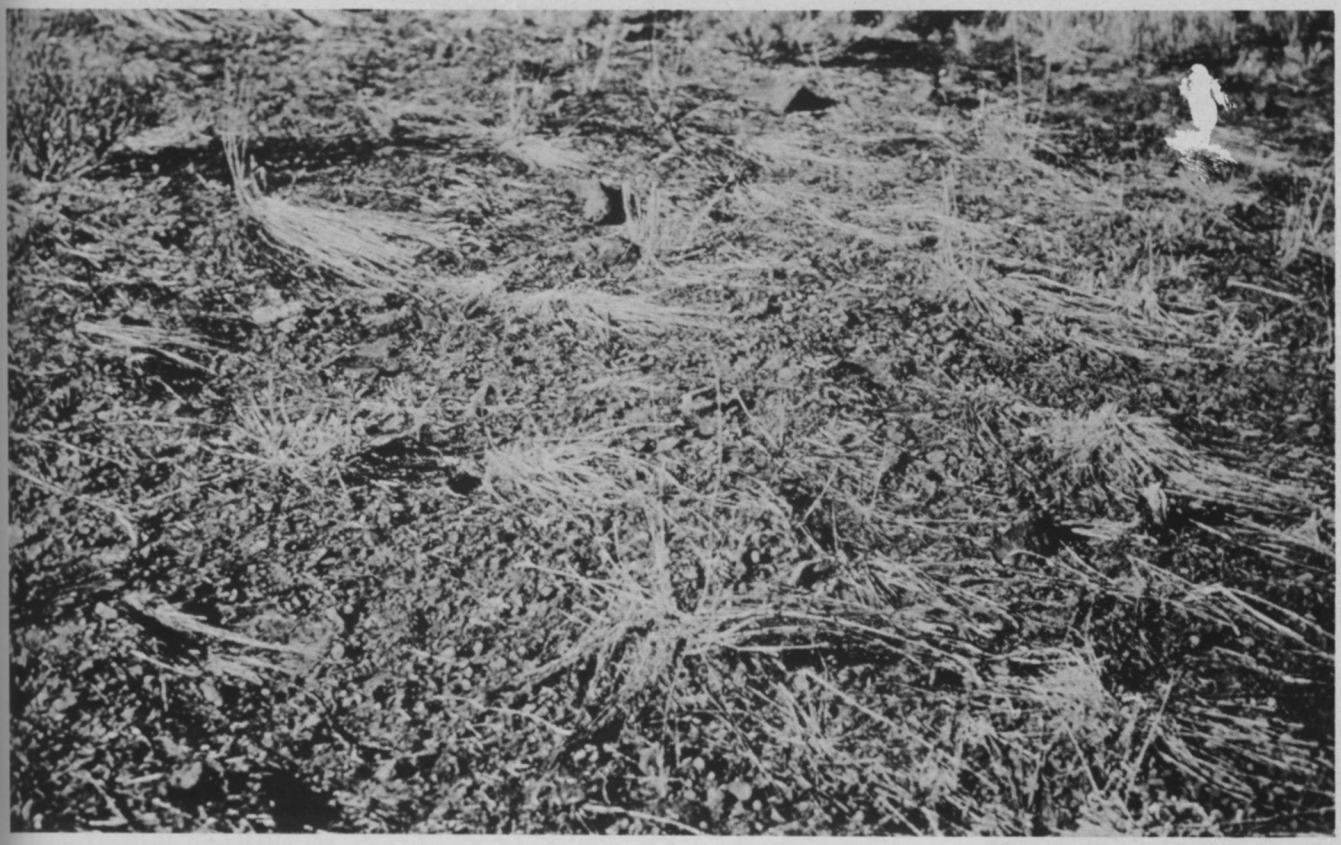
To control Johnsongrass, an application of 5 to 10 pounds of Tandex 80WP or 100-200 pounds of Tandex 4G per acre during the dormant season is specified. It should be followed later with foliar applications of MSMA at 4 pounds per acre.

Label dosage of 15 to 30 pounds of Tandex 80WP or 300 to 600 pounds of Tandex 4G are suggested to control: ash, aspen, elderberry, hawthorn, sumac, Bermudagrass, dallisgrass, nutgrass, vaseygrass, field bindweed, poison ivy and hedge bindweed. For saltgrass control restrict treatments to soils low in organic or clay content.

Along this highway in San Jose, Calif., Tandex 80WP was applied at 7.5 lbs. per acre in March, 1967, followed by a maintenance treatment rate of 3.75 lbs. per acre in February, 1968. Picture was photographed in April, 1968.



This interior live oak at North Fork, Calif., was treated with Tandex 4G at 500 pounds per acre (20 pounds actual) in January, 1968. Picture was taken in April, 1968.



Among the weeds controlled at this location in Susanville, Calif., were: crested wheatgrass; downy brome; various broadleaf weeds, sagebrush; horsebrush; and lupine. Tandex 4G was applied at 100 pounds per acre in November, 1966. Picture was taken in September, 1967.