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T.O. 42C-1-17

TECHNICAL MANUAL

USE

OF

HERBICIDES

PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE

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22 NOVEMBER 1966

1. PURPOSE.

The purpose of this document is to provide instructions on use of herbicides.

2. GENERAL.

The herbicides specified in this document are used to control jungle foliage and food crops. Jungle foliage restricts visibility, impairs tactical operations, and provides cover for ambush and other enemy activities. Crops are treated to control their availability to unfriendly troops.

3. SCOPE.

These instructions apply to Air Force activities using herbicides for defoliation and plant control.

4. HERBICIDES USED.

a. Tbere are three herbicides used for general jungle defoliation and crop control. The following agents are available for use:

(1) ORANGE. Orange color band. A reddish-brown, oil-soluble liquid, composed of a mixture of normal butyl esters of 2,4,5-T acid and 2,4-D.

(2) TORDON 101. White color band. A dark-colored liquid, water-soluble mixture, composed of Picloram and 2,4-D in an amine salt form.

Note

This agent is available as a substitute for orange. The availability of orange in sufficient quantities will result in discontinued use of this agent.

(3) PHYTAR 560G (formerly Phytar 160). Blue color band. A clear liquid, water-soluble mixture composed of sodium cacodylate and cacodylic acid.

5. APPLICATION.

a. These herbicides are applied, as delivered from UC-123B aircraft at an altitude of 150 feet with an air speed of 130 knots, which results in a deposition rate of 3 gallons per acre. Application by aerial spray is most effective if accomplished prior to 0800 hours while inversion conditions exist, in absence of precipitation and while the wind is calm or not exceeding a velocity of 8 knots. This will insure proper settling of the spray on the target area.

b. Jungle vegetation responds to herbicide treatment best during the most rapid growth period. In tropical areas with a monsoon climate having seasonal separation into a rainy and a dry season, rapid growth would occur during the rainy season. In some tropical lowland areas, where a variety of evergreen species exists and water is plentiful and continuous growth exists, herbicides will be effective the year around.

c. Cultivated crops mature throughout the year and can be controlled effectively by applying the herbicide prior to the germination or mature stage. Broad leaf (bean) and narrow leaf (rice) species respond to different herbicides.

d. Oil soluble (Orange) herbicides are more effective under moist and rainy conditions than are water soluble herbicides (Tordon 101 and Phytar 560G). Oily agents are not readily washed off the foliage and they penetrate the waxy leaf surface more rapidly than do water soluble agents.

e. Applications for herbicides:

(1) Orange. This agent is used for general jungle defoliation and control of broad leaf food crops such as beans, manioc and sweet potatoes. Plant response is fairly rapid by susceptible species and visual leaf effect is evident within one week after application. The susceptible plant (or tree) receiving adequate spray ultimately dies. This chemical is the preferred agent for defoliation operations and may be used most efficiently during the rainy season. Vapors from this agent will affect surrounding vegetation and provide good canopy penetration.

(2) Tordon 101. This agent is used as an alternate for Orange, when Orange is not available as a general jungle defoliant. It is considered non-volatile and can be used adjacent to rubber plantations and where volatility (vaporization) of other herbicides is a problem. It is slower acting, taking approximately 4 weeks to produce visible plant response, followed by leaf drop and possible plant kill, but has a narrower spectrum of plant species susceptible to it than Orange or Blue. Response will be delayed when applied during the dry season. Since this agent is water soluble and easily washes off the leaves it should not be applied if rain is falling or is anticipated within one hour.

(3) Phytar 560G. This agent is used for control of rice crops and grasses such as elephant grass.

Note

Phytar 560G is a contact agent and will defoliate or desiccate foliage on contact. It has been used as a defoliant during the dry season.

(a) Application should be made while the plant is in the growth stage and prior to maturity or prior to the grain formation stage. Phytar will be used the year around since rice crops in SEA mature throughout the year. This agent acts as a desiccant (drying) resulting in rapid leaf kill within one week. It is water soluble and should not be applied during precipitation or when rain is expected within 12 hours after application.

CAUTION

When Phytar 560G and Tordon 101 are mixed a precipitate will form that will clog the spray system. Particular care will be exercised to remove residual Phytar by liberally flushing with water prior to filling aircraft tank with Tordon. Residual Tordon will be removed by the same means prior to filling with Phytar.

6. EQUIPMENT USED.

a. Modified C-123 aircraft outfitted with the A/A 45Y-1 system are used to apply herbicides. This system consists of a 1000-gallon aircraft tank, pump, wing, and tail booms calibrated to apply herbicides at the rare of 3 gallons per acre, when flying at 150 feet and 130 knots.

b. Equipment should be kept in clean condition to prevent nozzle clogging and assure dispensing of the agent at the proper rate. As stated in CAUTION, paragraph 5.(a), equipment alternately used to apply Tordon and Phytat will require complete draining and flushing with water to prevent precipitation reaction between these agents with resultant clogging of the entire system.

7. STORAGE AND HANDLING.

Herbicides are delivered in 55-gallon steel drums marked with the identifying color band. Care must be exercised to assure proper storage, rotation of stock, and correct identification of the agent required for use. Transfer equipment used to transfer herbicides to ramp storage or aircraft tanks, will be properly maintained and cleaned to prevent contamination of the herbicide with dirt or other foreign material that would clog or impair operation of the aircraft spray system. Particular attention should be paid to the use of rubber-lined transfer hoses. Orange causes deterioration of the rubber lining and small bites of rubber may be distributed throughout the system, causing malfunctioning of the check valves at each nozzle position and resulting in unwanted drip from affected nozzles.

8. SAFETY PRECAUTIONS.

The herbicides specified for use herein are non-toxic to humans and animals under normal use conditions. Personnel handling these chemicals should take normal precautions to maintain personal cleanliness and avoid skin and eye contact with the material. These herbicides will deteriorate rubber or rubber compounds such as shoe soles and rubber hoses; therefore, Teflon products should be used wherever practical.

9. EXPERIENCE DATA.

Field activities using these agents are requested to periodically complete data on the performance of these agents, and to report any problems experienced. This information should be forwarded to SAAMA, Attn: SAOQT, Kelly Air Force Base, Texas, as promptly as possible. This will permit the updating of supporting technical data and correction of problems experienced with these materials.