

Location	Dates	Agents/Chemicals	Project Description	DoD
Apalachicola National Forest near Sophoppy, FL	5/3/1967 5/3/1967	basic desiccants and Agents Orange/Blue	During the period of 2/1966 - 10/1967, a comprehensive short term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contact research on formulations by chemical industry and field tests by USDA and U of HI	Yes
Fort Gordon, GA	7/15/1967 7/17/1967	In-house desiccants mixtures and formulations Orange and Blue	During the period 12/1966 - 10/1967, a comprehensive short term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contact research on formulations by chemical industry and field tests by USDA and U of HI	Yes
Fort Chaffee, AK	5/16/1967 5/18/1967 7/22/1967- 7/23/1967 8/23/1967 8/24/1967	basic, in-house, improved desiccants and Orange, Blue	During the period 12/1966 - 10/1967, a comprehensive short term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contact research on formulations by chemical industry and field tests by USDA and U of HI	Yes
Base Gagetown near Fredericton, New Brunswick Canada	6/20/1967 6/24/1967	Basic desiccants and Orange, Blue, various	During the period 12/1966 - 10/1967, a comprehensive short term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contacts research on formulations by chemical industry and field tests by USDA and U of HI	Yes
Las Marias, Puerto Rico	2/1967 12/1967	Various, including Orange	During the period 12/1966 - 10/1967, a comprehensive short term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contacts research on formulations by chemical industry and field tests by USDA and U of HI	Yes
Kauai Branch Station near Kapaa, Kawai, HI	6/1967 10/1967 12/1967 2/1968	Blue, diquat, paraquat, Orange, PCP, Picloram. White, HCA, 2,4,5-T, endothall	During the period 12/1966 - 10/1967, a comprehensive short term evaluation was conducted by personnel from Fort Detrick's Plant Science Lab in coordination with contacts research on formulations by chemical industry and field tests by USDA and U of HI	Yes
Thailand	1964 -1965	Purple, Orange, Others	Sponsored by ARPA: ARPA Order 423. Between the mentioned dates, there was a large-scale test program to determine effectiveness of mentioned agents in defoliation of upland forest or jungle vegetation representative of SEA	Yes
Eglin AFB, FL	11/1952- 12/1952	2,4-D; 2,4,5-T; 143 and 974,	Two trials: Chemical Corp concerned with basic fundamental work, using	Yes

		respectively	2,4-D; Air Force concerned with evaluating prototype large capacity spray system for aircraft installation using 2,4,5-T primarily. Using three (3) atomizing nozzles: Beta Fog Nozzles, Whir	
Beaumont, TX	6/1944	LN *phenoxy	Small plot experiments were concerned to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here they were testing on rice crops.	No
Bushnell Army Air Field, FL	1945	LN * phenoxy	Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was aerial spray experiments on potted plants	Yes
Vigo Plant CWS, Terre Haute, IN	5/1945 - 9/1945	LN (see attached) *phenoxy	Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here, it was aerial trials spraying field grown plants.	Yes
Jefferson Proving Grounds, Madison, IN	Summer 1945	LN * phenoxy	Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here it was dropping trials.	Yes
Granite Peak, UT	Summer 1945	LN * phenoxy	Small plot experiments were commenced to test the effectiveness of LN agents. Various trials were done under contract with the USDA, aided by personnel at Camp Detrick. Here it was dropping trials.	Yes
Avon Air Force Base, FL	2/1951 – 4/1951	Butyl; 2,4-D	Trials were conducted at Avon Air Force Base, FL by Chemical Corps with personnel of the Air Force and Navy to determine the practical effectiveness or spraying pure anti-crop agents at low volume from aircraft. C-47 and Navy XBT2D-I aircraft with various	Yes
Area B. Corp Detrick, MD	Spring/ Summer 1953	3:1 mixture 2,4-D and 2,4,5-T	Personnel at Camp Detrick tested the feasibility of using an experimental spray tower for applying a mixture of chemical anti-crop agents a broad leaf crops.	Yes
Bushnell	2/1945 -	2,4-D and its	Trials, performed by C.W.S. personnel	Yes

Army Air Field, Bushnell, FL	4/1945	ammonium salt	from Camp Detrick, MD. Tested the practicability of severely injuring or destroying crop plants sprayed from smoke tanks mounted on tactical aircraft.	
SEA	Summer 1977	Orange	In 1977, the USAF incinerated 2.22 million gallons of Herbicide Orange at sea in an operation entitled PACER HO. Extensive industrial hygiene sampling efforts supporting the transfer operations at Gulfport, MS and Johnston Island indicated all exposures...	Yes Gulfport, No
Korea, Third Brigade, 2 <sup>nd</sup> Division Area	7/23/1965 – 7/24/1968	Hyvar XWS, tandex, Urox B, Urox oil, concentrate (liquids) bromacil, tandex, Urox 22 (solids)	In 1968, chemicals were sent from the Plant Sciences Lab, Ft Detrick, MD. to the Republic of Korea for the purpose of testing their effectiveness in the control of vegetation.	Yes
Marinette WI, Weslaco, TX	5/1967 – 1/1969	Arsenic compounds, Orange, cacodylic acid, sodium cacodylate	71 new arsenic corn pounds were tested in primary screening against six plant species in greenhouse tests. Then, five of the most active compounds were tested in field trials against Red Maple and compared to formulations of cacodylate acid and a 50:50 blend of...	Yes
Eglin AFB, FL	6/11/1968 – 6/12/1968	Orange, Bifluid #1, Bifluid #2, Stull Bifluid	A spread factor study was performed by the Army to correlate the spherical drop sizes of both Orange and Stull Bifluid defoliants. It involved development of new techniques to determine spread factors over an extended range of drop sizes. A spinning cup d...	Yes
Fort Ritchie, MD	1963	Tordon; 2,4-D; Orange; diquat; endothal; and combinations of each with Tordon	Various studies were done to explore the effectiveness of different herbicides. They were all field trials. These studies were done by personnel from the US Army Biological Laboratories.	Yes
Fort Meade, MD	1963	Cacodylic acid, Dowco 173, butyediol	Various studies were done to explore the effectiveness of different herbicides. They were all field trials. These studies were done by personnel from the US Army Biological Laboratories.	Yes
Kumbla, South India	1945 -1946	LN compounds *phenoxy	The main objective of the experiments was to determine the feasibility of accomplishing severe injury or destruction of tropical food crops by the application of growth-inhibiting (LN*) compounds in static trials. Field plantings were treated with various...	Yes

Camp Detrick, MD – Fields A, B, and C	1945 -1947	2,4,5-T; 2,4,5-T triethanomine tributylphosphate; ethyl 2,4-D; butyl 2,4,5-Triet 2,4-D	The experiments were directed mainly towards the investigation of plant inhibitors applied as sprays or to the soil in solid form to be taken up by the roots.	Yes
Camp Detrick, MD – Fields C, D, and E	1948	2,4,5-T; isopropyl phenol carbamate, LN 2426, 2,4-D	The experiments were directed mainly towards the investigation or plant inhibitors applied as sprays or in the solid form to be taken up by the roots.	Yes
Camp Detrick, MD – Fields C, D, E	1949	Triethelyne; 2,4,5-T; carbamates	The experiments were directed mainly towards the investigation or plant inhibitors applied as sprays or in the solid form to be taken up by the roots. Experiments were done by Ennis, DeRose, Newman, Williamson, DeRigo, and Thomas	Yes
Kingston, RI	7/26/1949, 1950-51	Trieth 2,4,5-T; butyl 2,4,5-T; 974	The experiments were directed mainly towards the investigation or plant inhibitors applied as sprays or in the solid form to be taken up by the roots. Experiments were carried under supervision of TE Odland of RI State College H.T. D.	Yes
Camp Detrick, MD – Fields A, B, D, E	1950	2464, butyl 2,4-D; 974, butyl 2,4,5-T; q:q 143 and 974	The experiments were directed mainly towards the investigation or plant inhibitors applied as sprays or in the solid form to be taken up by the roots. Experiments were done by Ennis, DeRose, Acker, Newman, Williamson, and Zimmerly	Yes
Camp Detrick, MD – Field F	1950-51	2464, butyl 2,4-D; 143 and 974 (Orange?); 2,4,5-T and 2,4-D, Orange	The experiments were directed mainly towards the investigation or plant inhibitors applied as sprays or in the solid form to be taken up by the roots. Experiments were done by Acker, DeRose, McLane, Newman, Williamson, Baker, Dean, Johnson, T...	Yes
Orlando, FL at Army Grove Air Force's Tactical Center	3/14/1944, 4/12/1944	ammonium thiocyanate, zinc chloride, sodium nitrate, sodium arsenate, sodium fluoride	The purpose was to determine means or accomplishing defoliation of tropical forest vegetation by application of a chemical agent.	Yes
Marathon, FL	3/21/1944, 3/23/1944	zinc chloride, ammonium sulphamate, ammonium thiocyanate	The purpose was to determine means or accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Spraying was done here.	Yes
Near Lake George, FL	Spring 1944	zinc chloride	The purpose was to determine means or accomplishing defoliation of tropical forest vegetation by application of a	Yes

			chemical agent. Spraying here.	
Near Wayside, MS; Wilcox Road, Greenville, MS	8/18/1967	Picloram, bromacil, pyriclor and terbacil, Orange, cacodylic acid	In 19€7, the Dow Chemical Company was awarded a DoD research contract. The objective was to prepare as pellets mixtures or various herbicides and to test them on varying vegetation situations for the control of range of plant species.	Und
Las Mesas Cerros, Mayaguez, PR	5/24/1968 5/26/1968 5/27/1968	Picloram, bromacil, pyriclor	In 19€7, the Dow Chemical Company was awarded a DoD research contract. The objective was to prepare as pellets mixtures or various herbicides and to test them on varying vegetation situations for the control of range of plant species.	Und
Fulcher Ranch. Greenville, MS	4/18/1968	Picloram and bromacil	In 19€7, the Dow Chemical Company was awarded a DoD research contract. The objective was to prepare as pellets mixtures or various herbicides and to test them on varying vegetation situations for the control of range of plant species.	Und
Replacement Training Center of the Royal Thai Army near Prانبuri, Thailand	1964 and 1965	Orange and Purple	An extensive series or tests were conducted by Fort Detrick during 1964 and 1965 in collaboration with the Military Research and Development Center of Thailand. The objective was to perform onsite evaluation of phytotoxic chemicals on vegetation in SEA	Yes
Las Mesas and La Jagua experimental areas at Mayaguez. PR	2/1956 – 6/1956	2,4,5-T; 2,4-D; pentachloropheno I; ammate; weedazol; endothal; Harvestaid; Butyne-1,4-diol	During February to June, 9 chemicals were evaluated in PR on 16 genera tropical woody plants. The chemicals were applied in highly concentrated solutions with a micro-sprayer to the leaves.	Yes
Guanica and Joyuda, PR	6/1956 – 9/1956	2,4,5-T; potassium cyanate, amiendo, F-2, 6-Ca-4, Y-F Tree and Brush Killer. ACP M-118. Shed A-Leaf	Nine chemicals were evaluated on 16 genera of tropical woody between June and September. The chemicals were sprayed to duplicate small branches, using a micro-sprayer	Yes
Las Mesas and La Jagua Mayaguez, Joyuda at caho Rojo and Guanica Insular Forest at Guanica, PR	9/1956 – 12/1956	6-Ca-4, Liojn Oil; 2,4,5-T; B-1613; B-1638; Ammate; V-C1-186; endothal; Shed-A-Leaf; M-118; Y-F; esterone; 2,4-D	Sixteen compounds with defoliating properties were evaluated using 26 different tropical plants, each representing a separate genus. The chemicals were applied to duplicate small branches with a micro-sprayer and to single target branches or whole trees.	Yes
Las Mesas and	1/1957 –	V-C 3-105; V-C 1-21;	Seven compounds were evaluated on	Yes

La Jagua Mayaguez, Guanica Beach, PR	3/1957	V-C 1-443; F-7; TSP; Phillips 713; V-C 3-173	29 different woody plants to determine their effectiveness as defoliant, desiccants, and as killing agents. They were applied with a micro-sprayer to the upper leaf surfaces of duplicate small branches.	
Las Mesas and La Jagua Mayaguez, Guanica Beach, PR	4/1957 – 6/1957	B-1676; B-1638; NP 1098; SD 1369; Ammate; Shed-A-Leaf	Seven compounds were evaluated on 29 different woody plants to determine their effectiveness as defoliant, desiccants, and as killing agents. They were applied with a micro-sprayer to the upper leaf surfaces of duplicate small branches.	Yes
Las Mesas and La Jagua Mayaguez, PR	7/1957 – 12/1957	MgClO <sub>3</sub> ; Golden Harvest Defoliant; Dow-M562; F-8; F-9; F-10; F-11; F-12	Eight different spray formulations were applied to 15 different tropical trees and shrubs in order to evaluate their effectiveness as defoliant, desiccants, and as killing agents.	Yes
Southeastern part of Kompong Cham Province and Dar and Prek Clong plantations, Cambodia	6/1969	Orange	In 6/1969, the US government received notice of charge by Cambodian government that major defoliation damage to the Cambodian rubber plantation near the RVN border had occurred as a result of US defoliation activity. This was confirmed by a team of experts.	Yes
State Forest area, 3500 ft elevation on slope of Mauna Loa, near Hilo, HI	12/2/1965 12/4/1965 1/12/1967	Orange; M-3140; TORDON ester; 2,4-D ester; 2,4,5-T ester	The purpose of this project was to evaluate iso-octyl ester of picloram (TORDON) in fixtures with ORANGE, as a candidate defoliant agent using ORANGE as standard. There were personnel from Fort Detrick there.	Und
Stone Valley Experimental Forest in Huntington County and near State College in Centre County, PA	3/1969 - 10/1970	Bromacil; diuron; tandex; fenuron; picloram	Soil-applied herbicides were studied by the U of PA with Ft Detrick for 18 months for their effectiveness, rapidity of action and duration of response in native stands of central PA grasses, broadleaf weeds, and woody plants. These herbicides were spread	Und
Fort Detrick, MD; Fort Ritchie, MD	1956 -1957	Various, 577 compounds	In 1956-1957, defoliation and desiccation were carried out at Fort Detrick and Fort Ritchie. Maryland by the Chemical Corps and Biological Warfare Research. These were bench tests.	Yes
GA and TN	1964	Diquat and Tordon 101; various	In 1964, helicopter spray tests were conducted on transmission line right-of-way by the Georgia Power Company and Tennessee Valley Authority in collaboration with Fort Detrick to	Yes

			evaluate effectiveness of several commercially available herbicides	
Two areas in FL; Two areas in GA; and One in TN	1968	Bromacil, Tandex, monuron, diuron, and feruron	In 1968. emphasis was given to soil applied herbicide for grass control. Applications were made by a jeep-mounted sprayer on small plots or by helicopter on larger plots.	Yes
Orlando, FL; Cocoa. FL	1944	ammonium thiocyanate and zinc chloride	Tests were conducted in 1944 by the Army in Orlando and Cocoa areas of Florida to determine the value of ammonium thiocyanate and chloride as marking and defoliation agents.. They were conducted initially at ground level and later from aircraft.	Yes
Fort Knox, KY	1945	various	In 1945. a special project known as Sphinx was conducted jointly by CWS and the ARML to investigate the use of chemical agents for increasing the flammability of vegetation prior to flame attack.	Yes
Avon Park Air Force Base. FL	Spring 1954	butyl 2,4-D; butyl 2,4,5-T; Isopropyl 2,4-D	Series of tests were conducted at Avon Park AFB during the spring of 1954 to study the behavior of chemical anti-crop aerial sprays when released from high-speed jet aircraft. The Navy F3D jet fighter was used with Aero 14A Airborne Spray Tanks to disperse.	Yes
Galatin Valley near Bozeman, Montana	7/3/1953, 7/6/1953 7/14/1953	4-fluorophenoxy-acetic acid and 2 of its esters, 3:1 butyl 2,4-D and butyl 2,4,5-T	A preliminary series of field evaluations of chemical agents for attacking wheat using a miniature spraying system mounted on light aircraft were performed by USDA.	Yes
Laos	12/1965 - 1967	Orange	In December 1965. herbicide operations were begun in Laos with sorties being flown from Tan Son Nhut and Da Nang. The purpose was the exposure of foot trails, dirt roads, and other LOCs that crossed into SVN. This network leads from NVN through the east	Yes
Pinal Mountains near Globe, AZ	1965, 1966, 1968, and 1969	2,4-D isooctyl-ester; 2,4,5-T isooctyl-ester; Silvex; propyleneglycolbutylether ester; 2,4,5-T butyl ester; another 2,4,5-T ester	In 1965, the USFS began a land improvement program in the Pinal Mountains. The program called for spraying an area of chaparral with herbicides to accomplish the objective of multiple land use.	No
Near Rio Grande on the northeast coast of Puerto	8/23/1967, 10/18/1967, 12/21/1967, 12/26/1967	picloram, bromacil, pyriclor, and terbacil	In 1967. the Dow Chemical Company was awarded a DoD research contract. The objective was to prepare as pellets mixtures or various herbicides and to	Und

Rico			test them on varying vegetation situations for the control of a range of plant species.	
Poole's Island, Aberdeen Proving Ground, MD	7/14/1969	Orange; Orange plus foam	During the week of 7/14/1969, personnel from Naval Applied Science Laboratory in conjunction with Personnel from Limited War Laboratory conducted a defoliation test along the shoreline.	Yes
Fort Drum, NY	1959	Orange	The Commanding General, 1st US Army, requested that Ft Detrick assist with defoliation efforts at Ft Drum. Thirteen drums were sprayed there on 4 square miles from a helicopter spray device.	Yes
Loquillo, PR	4/1966, 10/1966	Orange	Field tests of defoliants were designed to evaluate such variables as rates, volume of application, season, and vegetation. Data from aerial application tests at several CONUS and OCONUS locations are provided in tables.	Yes
Hilo, HI	10/1966	Orange	Field tests of defoliants were designed to evaluate such variables as rates, volume of application, season, and vegetation. Data from aerial application tests at several CONUS and OCONUS locations are provided in tables. There were Fort Detrick personnel present.	Yes
Kauai, HI	1967	Orange	Field tests of defoliants were designed to evaluate such variables as rates, volume of application, season, and vegetation. Data from aerial application tests at several CONUS and OCONUS locations are provided in tables.	Yes
Thailand	1964-1965	Orange; Blue	Field tests of defoliants were designed to evaluate such variables as rates, volume of application, season, and vegetation. Data from aerial application tests at several CONUS and OCONUS locations are provided in tables.	Yes
Jacksonville, FL	7/18/1962 - 7/21/1962	Purple fuel oil mix	The HIDAL was used successfully on an H-34 helicopter to spray herbicidal materials. Therefore, it had not be done previously. This was done under order by OSD/ARFA	Yes
Fort Detrick, MD	8/1964-6/1963	1410 compounds	From 1961 to 1963, compounds were spray-tested in the greenhouse to evaluate them as effective defoliants,	Yes



			desiccants. and herbicides	
Gulfport, MS	1968-1970	Orange	While discussing the mandatory disposal of Orange, it was mentioned that 15,161 drums were being stored at Gulfport, Mississippi	Yes
Korea, 2nd and 4th Brigades, 2nd Division area	8/1968	Hyvar XWS; tandex; Urox B; Urox oil concentrate (liquids); bromacil, tandex, Urox 22 (solids)	In 1968. chemicals were sent from the Plant Sciences Lab, Ft Detrick, MD to the Republic of Korea for the purpose of testing their effectiveness in the control of vegetation	Yes
Korea, 3 <sup>rd</sup> Brigade, 2 <sup>nd</sup> Division area	10/3/1968	Hyvar XWS; tandex; Urox B; Urox oil concentrate (liquids); bromacil, tandex, Urox 22 (solids)	In 1968. chemicals were sent from the Plant Sciences Lab, Ft Detrick, MD to the Republic of Korea for the purpose of testing their effectiveness in the control of vegetation	Yes
Hays, KS, Langdon, ND	1960	Stem rust of wheat	Two studies on the stem rust of wheat were conducted during 1960 to obtain data on the establishment, development. and destructiveness of artificially induced stem rust epiphytotics	Und
Eglin AFB. FL. C-52A test area	1960 - 1972	Orange (1962-68); Purple (1962-68); White (1947-70); Blue (1968-70)	CPT John Hunter discussed vegetation changes and ecological studies of the 2 square mile test area which had been sprayed with herbicides over the period 1962-70.	Yes
Beaumont, TX	1950 - 1951	2,4-D	The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Here, irrigation water studies were done with the agent. Coghill, Hasse, and Yeatner worked here.	Und
Prosser, WA	1950 - 1951	2,4-D	The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Here, irrigation water studies were done with the agent. VF Burns worked here.	Und
Brawley, CA	1950 - 1951	2,4-D	The purpose was to determine means of accomplishing defoliation of tropical forest vegetation by application of a chemical agent. Here, irrigation water studies were done with the agent. HF Arle worked here.	Und