

Row Crop Flaming Equipment



The Natural Solution For Controlling Problem Weeds & Grasses In The Row!







Flaming is Safe, Effective, Economical and Environmentally

- Effective Kills Weeds & Grasses, Destroys Insect Habitat in the Row.
- Environmentally Sound No Runoff, Residues or Water Contamination.
- **Safe For The Operator Electronic Shutdown From The Driver's Seat.**
- **Economical Save Up To 50% Over Chemical Applications.**
- ► Flame Applications Can Be Applied When It's Too Wet To Cultivate.
- **Burn Clean, Efficient and Affordable Propane.**
- **Great For Organic and Conventional Producers.**

Row Crop Flaming Background:

Flaming was a very popular practice on corn, cotton and other row crops prior to the introduction of herbicides and pesticides. In fact, so much research was performed in the first half of this century that flaming was becoming a primary method of weed control in cotton. So, why did it nearly disappear, only to reappear in the 1990's? Were it not for the abundance of cheap herbicides in the 1960's and early 1970's and the relatively high price of LP at that time, flaming may very well have gone on to become "the" method of controlling weeds and grasses in the crop row. Due to recent high costs and the environmental issues associated with chemicals, flaming is making a very successful comeback across the country and abroad.

The recent rebound began in the food industry where growers began to see premiums for crops raised naturally. Farmers from all areas now realize the economic advantages and the flexibility flaming allows in a wide variety of crops. In fact, many crops are so resilient to flame weeding that there is almost no noticeable effect to the plant.

How Flaming Works:

Red Dragon Row Crop Flamers feature specially designed liquid propane burners which kill weeds in the row without harming the crop. By staggering the burners and flaming at the base of the crop, most crop leaves are not exposed. Small weeds and grasses in the path of the flame die almost instantly. Larger weeds die or are severely stunted, allowing the heartier row crop to shade out competitive weeds and grasses. In addition, you may re-enter the field to pick up stragglers at a much more affordable rate than chemical and without risk to the crop. It is not necessary to burn the weeds to a crisp, but rather raise the temperature in the leaves to injure cell structure. This will destroy the plant's ability to take in moisture and cause the plant to wither and die. Because the crops and weeds are green, there is very little smoke. In most cases a split second of exposure is all it takes. Smaller, more tender plants are much more susceptible to heat than mature growth, therefore, the crop should be larger that the weeds or grass to be controlled.

Typically the burners are set at an angle of 45 to 30 degrees horizontal, with burners 4 to 10 inches from the crop and a pressure of 25 to 70 PSIG. Tractor speed will range from 3 to 5 m.p.h. Generally, the torches are staggered so that flames do not collide and cause rollup on the crop leaves.



As the Row Crop Flamer moves through the field the burners direct an intense flame into the crop row, destroying hard to reach weeds and grasses.

Sound.

Row Crop Flamer in action in a Kansas milo field.

Safely Flame:

- Corn
- Milo
- Soybeans
- Cotton
- Potatoes
- Tomatoes
- Cole Crops
- Grain Sorghum
- and More!





Torches are staggered when moving through the row so as not to collide with the flame from the opposite burner.



Burners are generally set at an angle of 45-30 degrees from horizontal and 4-10 inches from the crop.

Taken To Extremes:

In a university study, researchers actually over-flamed a surplus test plot of established milo at 1 1/5 m.p.h. The leaves of the milo were damaged and eventually turned white. However, this same crop yielded comparatively to unflamed plants in the same plot. While we do not recommend over exposing your crops, this illustrates an important aspect of flaming. When lower leaves are singed, the plant puts all of its energy toward saving the upper leaves which are primarily responsible for grain, boll or fruit production. Roots remain undamaged and higher yields are often the result.

Flame Early To Prepare A Healthy Seed Bed:

Many weeds and grasses that adversely effect crops can be successfully controlled with row crop flaming. It can be used just ahead of planting or right after planting but before the crop emerges. Pre-emergent flaming sterilizes the seed bed and helps prevent weed seedlings from competing with the crop.

Quite a number of crops have the ability to regrow burned off tops of young plants. Onions, corn, grain sorghums, potatoes and other crops may be flamed if the early stand is heavily pressured by weed populations. As these crops emerge from the soil they can be flamed to control weeds.

It is important to remember that flaming can be used for weed and grass control, and also for insect control. It is proven to be effective in controlling the alfalfa weevil and the Colorado potato beetle.

To test the effectiveness of flaming, pinch the leaf of a weed or grass between the thumb and forefinger. A thumbprint is a good indication that intense heat has been applied to the weed and it will die.



Flame Engineering manufactures RED DRAGON flaming equipm

Complete Units & Kits Three Burner Styles To Choose From Skid or Drop Legs Electronic Control Valves With In Cab Controls

Red Dragon Row Crop Flaming Units:

Complete units come with everything you need to get started except for the tank and tank adaptor. Available in 2, 4, 6 and 8 row models, featuring skid style tool bar legs.

Complete Units Include:

Complete roll cage protection for tank & control heads Tank straps with valve guard assembly Category 2 - 3 point hitch Tool bar complete with skid leg mounting brackets Hydraulics for tool bar (standard on 8 RU - Optional on 6 RU) Complete Manifold Assemblies with electronic solenoids Cab Control Box with master shut-off switch Skid Style Tool bar Leg Assemblies All Torches Needed All necessary hoses included with brass fittings installed Fuel Strainer Red Dragon Vapor Torch Kit for lighting of burners

Red Dragon Row Crop Flaming Kits:

Kits are available in two styles to be mounted on your tool bar and are available in 2, 4, 6, 8, 12 & 16 row models with either skid style legs or drop legs. You will be responsible for devising your own safe tank mounting system, roll cage and control protection. Kits include everything else except the connection to your tank, including custom mounting brackets for the tool bar legs - just let us know the dimensions of your tool bar. Example: 4"x 4" square.

4 Row Drop Leg Kit (4 RK) Shown Here. Drop legs do not touch the ground.







Kits Include:

Complete Manifold Assemblies with electronic solenoids Cab Control Box with master shut-off switch Skid or Drop Style Tool bar Leg Assemblies Custom Tool Bar Leg Brackets All Torches Needed All necessary hoses cut to length with brass fittings Fuel Strainer

ent designed to fit your needs.



Detail of an assembled skid leg (left) and an assembled drop leg (right). Note how the burners are staggered and how burner height and angle can be easily adjusted.

Environmentally Sound:

The Red Dragon Line of Agricultural Flamers can help reduce the amount of chemicals applied to farmland. This is an issue which affects today's farmers and will leave a lasting impact on future generations. Flamers burn clean, efficient propane, so there is no residue, run-off or contamination to worry about.

Economical:

Row Crop Flamers use 5-10 gallons of propane per acre, making the application roughly half the cost of herbicides in a normal year.



Each Row Crop Flamer Unit and Kit comes complete with 12 volt solenoids which allow the operator to go from pilot to full flame with the flip of a switch from the operator control box which can be mounted by the tractor seat.



The burners of the Row Crop Flamer are lit by hand as shown, after the flamer has been positioned in the row.



LT 11/2 x 8 D This is our standard Row Crop Burner. It projects a sweeping flame up

to 10" wide and

30" long.

Choose From 3 Burner Styles

LT 2 x 8

This optional Row Crop Burner projects a sweeping flame up to 18" wide and 36" long. Use to sterilize seed beds & broadcast flame.

LT 1¹/2 x 6

This optional Row Crop Burner projects a concentrated flame up to 6" wide and 16" long.

Row Crop & Potato Vine Flamer Equipment Specifications

COMPLETE ROW CROP UNITS			PUTATO VINE FLAMMING UNITS		
Order SKU #	Description	Wt Each	Order SKU #	Description	Wt Each
2 RU	2 Row Unit	802 lbs	2 PVF	2 Row Unit	802 lbs
4 RU	4 Row Unit	1000 lbs	4 PVF	4 Row Unit	1000 lbs
6 RU	6 Row Unit	1250 lbs	6 PVF	6 Row Unit	1250 lbs
8 RU	8 Row Unit	1450 lbs	8 PVF	8 Row Unit	1450 lbs
SKID LEG ROW CROP KITS			DROP LEG ROW CROP KITS		
Order SKU #	Description	Wt Each	Order SKU #	Description	Wt Each
2 RKS	2 Row Kit	220 lbs	2 RK	2 Row Kit	89 lbs
4 RKS	4 Row Kit	312 lbs	4 RK	4 Row Kit	136 lbs
6 RKS	6 Row Kit	450 lbs	6 RK	6 Row Kit	214 lbs

Red Dragon Complete Row Crop and Potato Vine Flaming Units are designed to hold a 250 gallon tank.

8 RK

12 RK

16 RK

560 lbs

900 lbs

1120 lbs

Important Note About LP Tanks: Always consult your propane dealer about purchasing the proper tank or ask them to check your existing tank to make sure it is clean and safe before you begin flaming. You MUST use a propane tank equipped with a Liquid Withdrawal Valve. Do NOT use a bottom withdrawal valve as any possible debris or scale in the tank may plug torches or solenoids down the line. We recommend a top-mounted, liquid withdrawal valve with a dip tube . Clean fuel and tank are critical for optimum performance of all flaming equipment.

Row Crop Flaming History

In 1938 an Alabama farmer had an idea. Price McLemore discovered that the flame from a kerosene burner would destroy the weeds in his cotton and corn. A machine was assembled and several acres of his corn and cotton were flamed cultivated. This first known attempt at flame cultivation from a tractor-mounted unit consisted of two kerosene burners per row on a tworow unit. The fuel tank was pressurized with a bicycle pump, which would supply the necessary fuel to the four burners. This must have been quite a site to neighboring farmers as he drove the tractor with one hand and pumped like crazy with the other hand. It was crude but effective.

8 Row Kit

12 Row Kit

16 Row Kit

8 RKS

12 RKS

16 RKS

For several years he attempted to arouse interest in his process by presenting it to agricultural research institutions and experiment stations. Most of his efforts were met with disbelief and laughter. Finally, in 1942 Louisiana State University began experimenting with flame weeding in sugar cane under the direction of Dr. H. T. Barr. The Delta Branch Experiment Station included flame cultivation in their 1943 cotton weed control project, and in 1944 they began work with corn and soybeans. Results of these experiments were very promising, especially in cotton, and generated a great deal of interest among farmers in Louisiana, Mississippi, and Arkansas. It is estimated that by 1946 there were at least 1,000 flame cultivators in the cotton fields of the Mississippi Delta.

Soon after, the International Harvester Company began researching flame cultivation and developed a cast iron burner. It produced a relatively flat, fan-shaped flame which improved the coverage area as the unit moved

through the field. However, this project was abandoned due to a corporate decision.

One of the next developments in row crop cultivation was the addition of another burner, sometimes under a hood, to control the weeds and grass between the rows. This was not universally accepted, according to J. W. Gotcher Sr., President of Gotcher Engineering and Manufacturing Co., an early manufacturer of flaming equipment. "Most growers thought it was necessary to stir the soil at regular intervals throughout most of the growing season for maximum plant growth and production" according to Gotcher. The third burner technique became popular when frequent rains caused the fields to be too wet to cultivate in the conventional manner.

It is estimated that by 1960 there were 15,000 flaming units in the fields, most of which were being used in cotton with some used in corn and soybeans. About this same time interest was growing in non-selective flaming of mint and alfalfa.

In the years that followed, research proved that flame cultivation, can be used on 30 to 40 different crops with good results. Although the majority of the research has been done with corn, cotton, and soybeans, many other crops such as milo, garlic, blueberries, strawberries, radish, lettuce, potatoes, asparagus, grapes, fruit trees, and the Australian tea tree all have been successfully flame cultivated.

8 Row Kit

12 Row Kit

16 Row Kit

254 lbs

428 lbs

508 lbs

NOW AVAILABLE - RED DRAGON Potato Vine Flamers

► One Application - Chemical Free Potato Vine Desiccation

Effective & Affordable Treatment of Blight Spore

Preemergence Weed Control



Red Dragon Potato Vine Flamer in Action in a Nebraska Potato Field

> Flaming is also a very effective weapon for blight control. Chemical treatments are expensive, and not an option for organic growers. Scorching the ground right before harvest will help control blight spores.

> Fuel consumption averages 20 to 30 gallons per acre and is dictated by pressure supplied to the spray nozzles and ground speed. Ground speeds range from 3 to 5 m.p.h, depending on thickness of foliation.

Each unit comes complete with electronic solenoids allowing flame control and emergency shut-off from the driver's seat.

Potato Vine Flaming:

Red Dragon Potato Vine Flamers offer producers an organic way to desiccate potato vines, stop the growth and set the skins. Flamers burn clean, efficient propane, so there is no residue, run-off or contamination as with chemical or acid use.

This flaming process uses our patented liquid propane spray torches which are specially designed to penetrate the vines and apply heat close to the ground. The canopy of vines and foliage help hold the heat helping to make more efficient use of the fuel. The intense heat shocks the green vines and destroys cell tissues in the leaves, destroying the plant's ability to conduct photosynthesis.

Potato Vine Flamer Units are available in 2, 4, 6 & 8 row models. See specifications on the previous page.



Flame Engineering's patented liquid spray flaming in action. This gives you a good idea what is happening under the potato vine canopy when flaming.



The dark rows were flamed 10 minutes prior to the photograph.



After 5 days the results are obvious.



Twelve days later.

Contact us about our complete line of agricultural flamers and torches.

Red Dragon Alfalfa Flamers



The Red Dragon Alfalfa Field Flamer features the patented liquid spray process which kills weevil, weeds and grasses. Yields have been significantly increased with just one flame treatment. This lightweight, easy-to-assemble flamer can also be used by nut growers for pre-harvest burn down. Please call for Alfalfa Field Flamer Literature and more information.

Red Dragon Vineyard/Orchard Flamers



Red Dragon Vineyard & Orchard Flamers control weeds, grasses and insects on the berm. A great tool for winter clean up keeping berms free of debris and destroying habitat for harmful insects. An alley attachment is also available for flaming between the berms. Please call for Berm Flamer Literature, Free Video offer and more information.

Flame Engineering, Inc. – The Leaders in Flame Technology:

In the mid 1950's, Ralph C. Pivonka and his son Mike, designed a propane torch for burning weeds on their Kansas farm. As word spread about their torch, they found themselves building more and more to satisfy a growing local demand. They soon outgrew their family workshop and went into full production. Now, over 40 years and 8 patents later, family owned Flame Engineering and its popular Red Dragon Torch Line has expanded into national and international markets with over 100 products. With a great commitment to customer satisfaction and quality products, Flame Engineering will continue to lead into the 21st century.

Contact your Red Dragon Distributor or Flame Engineering for more information today.

800-255-2469 • www.FlameEngineering.com

Distributed By:

P.O. Box 577 • W. Highway 4 LaCrosse, Kansas 67548 Toll Free: 800-255-2469 785-222-2873 • Fax: 785-222-3619 www.FlameEngineering.com flame@flameengineering.com



©2002-2007 FLAME ENGINEERING, INC. • Printed in U.S.A. #RCF0707