

AGRILIANCE ADJUVANT UPDATE. Gregory K. Dahl, Joe V. Gednalske and Eric Spandl, Research Coordinator, Manager of Product Development and Agronomist, Agrilience LLC, St. Paul, MN 55164.

High surfactant oil concentrates are a recently recognized category of adjuvants. High surfactant oil concentrates are emulsifiable oil based products that contain 25 to 50 percent surfactant by weight in a minimum of 50% oil by weight. Agrilience has been manufacturing and selling high surfactant oil concentrates for the past few years. Currently high surfactant oil concentrates are used on approximately 14% of the acres treated with crop oil concentrates.

Agrilience has developed and will be marketing a high surfactant oil concentrate that uses methylated seed oil for the oil portion.

Field studies were conducted with nineteen herbicides such as nicosulfuron, nicosulfuron plus rimsulfuron, foramsulfuron, imazamox, clethodim, mesotrione, bentazon, atrazine, mesosulfuron and other herbicides applied at reduced rates with oil type adjuvants. The methylated seed oil based high surfactant oil concentrate was compared to current methylated seed oil adjuvants, petroleum based high surfactant oil concentrates and to crop oil concentrates, containing 17% emulsifier and 83% paraffinic oil. Crop oil concentrates and methylated seed oils were applied at labeled rates. The methylated seed oil and petroleum oil based high surfactant oil concentrates were applied at one-half of the rate of the methylated seed oils and crop oil concentrates.

Weed control was evaluated visually. Weed control with herbicides was similar when applied with methylated seed oil based high surfactant oil concentrates at one-half rates compared to methylated seed oil adjuvants applied at full rates. Methylated seed oils and methylated seed oil high surfactant oil concentrates provided equal or better weed control than petroleum based high surfactant oil concentrates or crop oil concentrates.

Field studies were conducted to evaluate the influence of adjuvants on control of glyphosate tolerant volunteer corn with glyphosate plus reduced rates of clethodim. Treatments included the herbicides alone and the herbicides with nonionic surfactant, crop oil concentrate, petroleum based high surfactant oil concentrate, methylated seed oil based high surfactant oil concentrates and methylated seed oil. In certain trials the previously listed adjuvants were applied without ammonium sulfate to determine the influence of the adjuvant alone. In most trials the adjuvants were applied with ammonium sulfate to improve weed control.

Treatments that contained an oil adjuvant system provided greater control of the glyphosate tolerant volunteer corn than treatments without oil adjuvants. The methylated seed oil high surfactant oil concentrate plus ammonium sulfate provided the greatest control of glyphosate tolerant corn. Some treatments that contained oil adjuvants such as traditional methylated seed oils provided less broadleaf weed control than treatments that did not contain oils. Methylated seed oil high surfactant oil concentrate plus ammonium sulfate adjuvant systems provided the best balance of glyphosate tolerant volunteer corn and broadleaf weed control of the adjuvant systems tested.

A modified vegetable oil plus emulsifier system has been developed that has increased canopy penetration, retention and reduced spray drift. The product has been compatible with most nozzle types and has performed well in ground and aerial applications.

The modified vegetable oil adjuvant reduced the percentage of fine droplets with most nozzle types without significantly increasing the percentage of very coarse droplets. This adjuvant has been used satisfactorily with nozzles that are incompatible with polymer type drift control adjuvants. The product has been used successfully on several million acres.