

HERBICIDE TOLERANCE IN CUPHEA: A NEW OILSEED CROP. Gary Amundson, Frank Forcella, and Russ Gesch, Engineering Technician, Research Agronomist, and Plant Physiologist, USDA-ARS, Morris, MN 56267.

Cuphea is a potential alternative oilseed crop that produces medium chain-length fatty acids (capric and lauric acids). These fatty acids are feedstocks for non-food products such as lubricants and detergents, which currently are imported in the form of coconut and palm kernel oils. Cuphea grows well in the upper Midwest of the United States and, therefore, is a potential domestic source of these fatty acids. However, weed management remains a challenge in cuphea, as the plant tolerates weeds very poorly. To overcome this limitation, we tested a wide range of soil-applied and POST herbicides on 'PSR-23' cuphea (*Cuphea viscosissima* x *C. lanceolata*) using a precision spray chamber and a temperature- and water-controlled greenhouse. Promising chemicals were subsequently field-tested on a clay loam soil at the Swan Lake Research Farm near Morris, MN. Before or immediately after cuphea was planted, PPI or PRE herbicides were applied in replicated strip plots. Once seedlings reached the 3-leaf stage, POST herbicides were applied in replicated strip plots perpendicular to the PPI-PRE plots. Cuphea tolerance to these treatments was scored 2 wks after the POST applications. Cuphea showed good tolerance to the following herbicides applied at rates labeled for soybean or corn: ethalfluralin PRE, isoxaflutole PRE, and mesotrione POST. Fair tolerance was shown to mesotrione PRE, trifluralin PPI, isoxaflutole PRE + mesotrione POST, ethalfluralin PRE + mesotrione POST, and imazethapyr POST. Although these herbicides do not control the entire spectrum of weeds found in the upper Midwest, they provide sufficient coverage to allow agronomic research to continue and initial stages of crop commercialization to begin.