AgriLIFE EXTENSION
Texas A&M System

Sorghum Ergot

Ronald French, Thomas Isakeit and Greta Schuster

Texas AgrlLife Extension Plant Pathology

Ergot

- *Claviceps africana*
- Occurs regularly throughout the sorghum producing region of the USA.
- Survives in dried honeydew on the soil surface, on plant residue, and as sphacelia and sclerotia in seed lots.
  - This pathogen also infects Johnsongrass and Shattercane (uncultivated *Sorghum bicolor*).

Ergot

Ergot

- The first visible symptoms are the appearance of white fungal bodies called sphaecelia extending from the glume where seed would normally develop.

- From these sphaecelia, a sugar-rich exudate known as honeydew flows.
  - The honeydew flows down the panicle and drips onto leaves and the soil.
  - The honeydew contains high populations of macrospores that can infect unfertilized florets

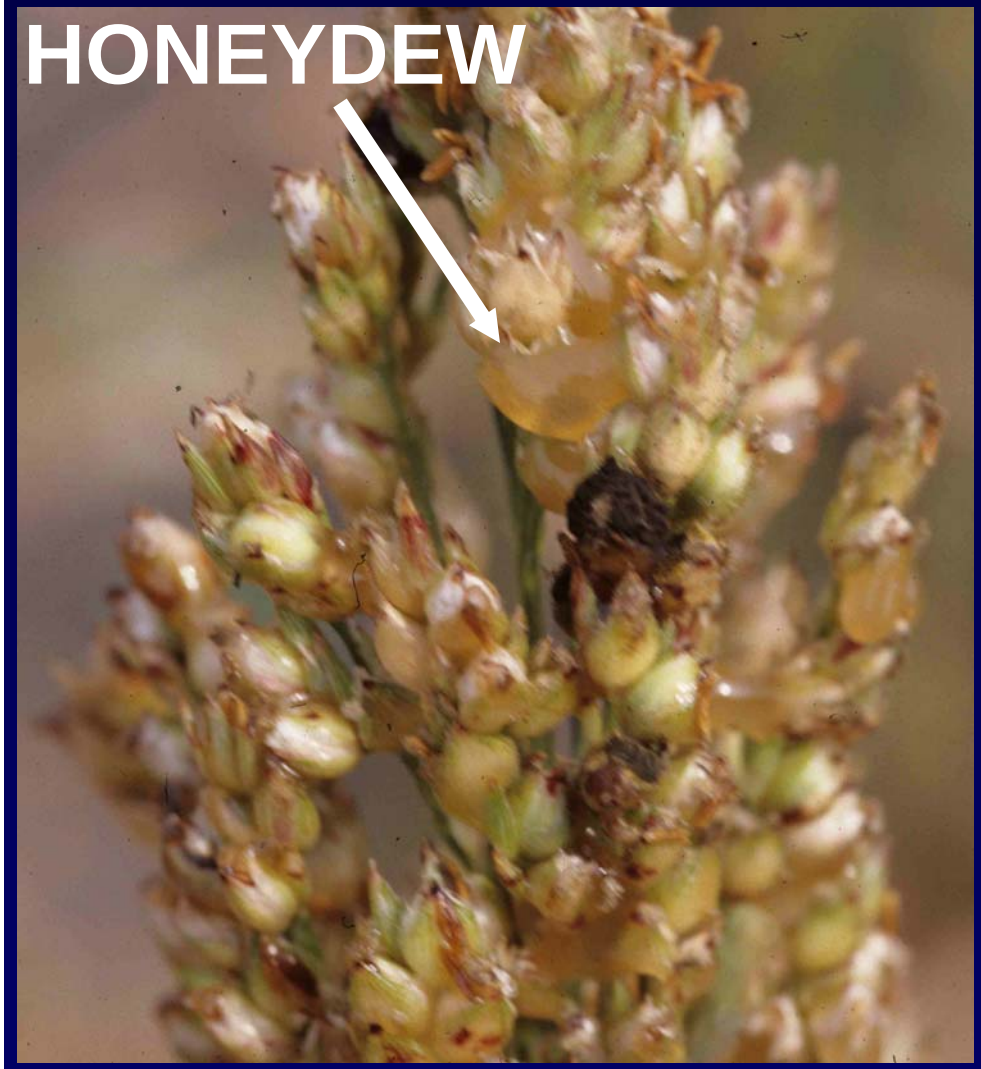
Ergot

Ergot

- **Favorable weather conditions:**
  - Low night temperatures (50°-55° F) during pollen formation (2-3 weeks prior to flowering) and at the time of flowering can increase susceptibility to ergot.
  - Rain can increase ergot incidence within a field AND winds can disperse the pathogen to other fields.
  - Moderate temperatures and high relative humidity favors disease

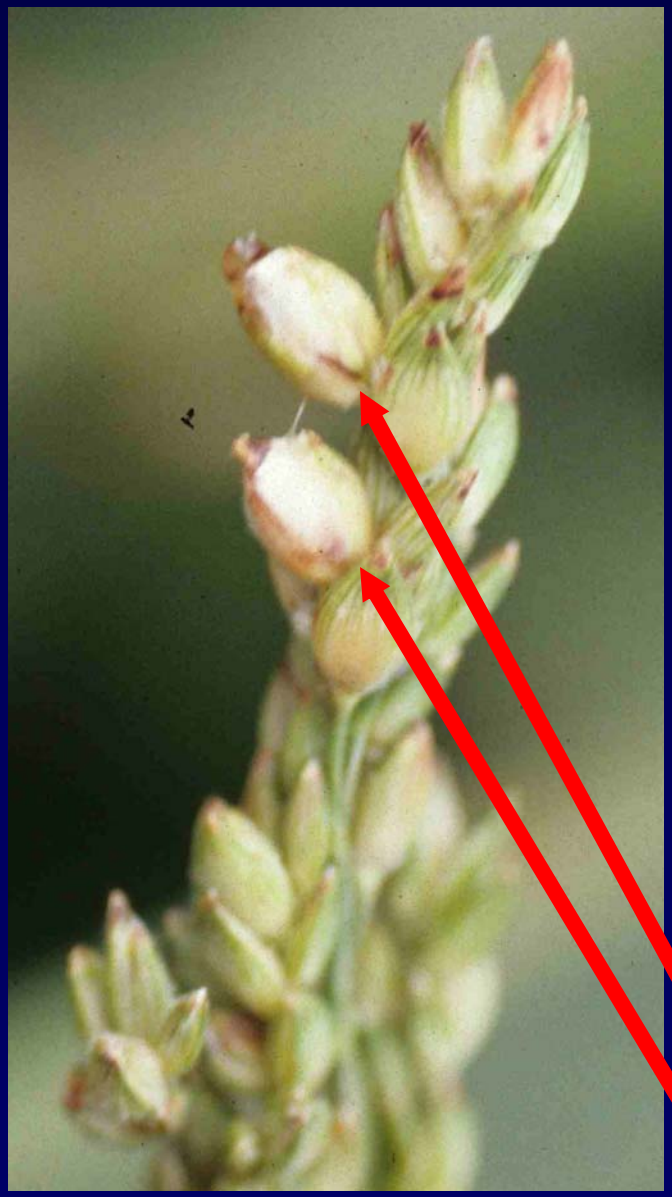
Sorghum Ergot

SORGHUM ERGOT: SYMPTOMS



HONEYDEW WITH FORMATION OF SECONDARY CONIDIA (WHITE)

EARLIEST SYMPTOMS



HONEYDEW (ON JOHNSONGRASS)
PRODUCED BY SPHACELIUM

WHITE, SWOLLEN FUNGAL BODIES
(SPHACELIA) THAT REPLACE SEED

LATER SYMPTOMS OF ERGOT

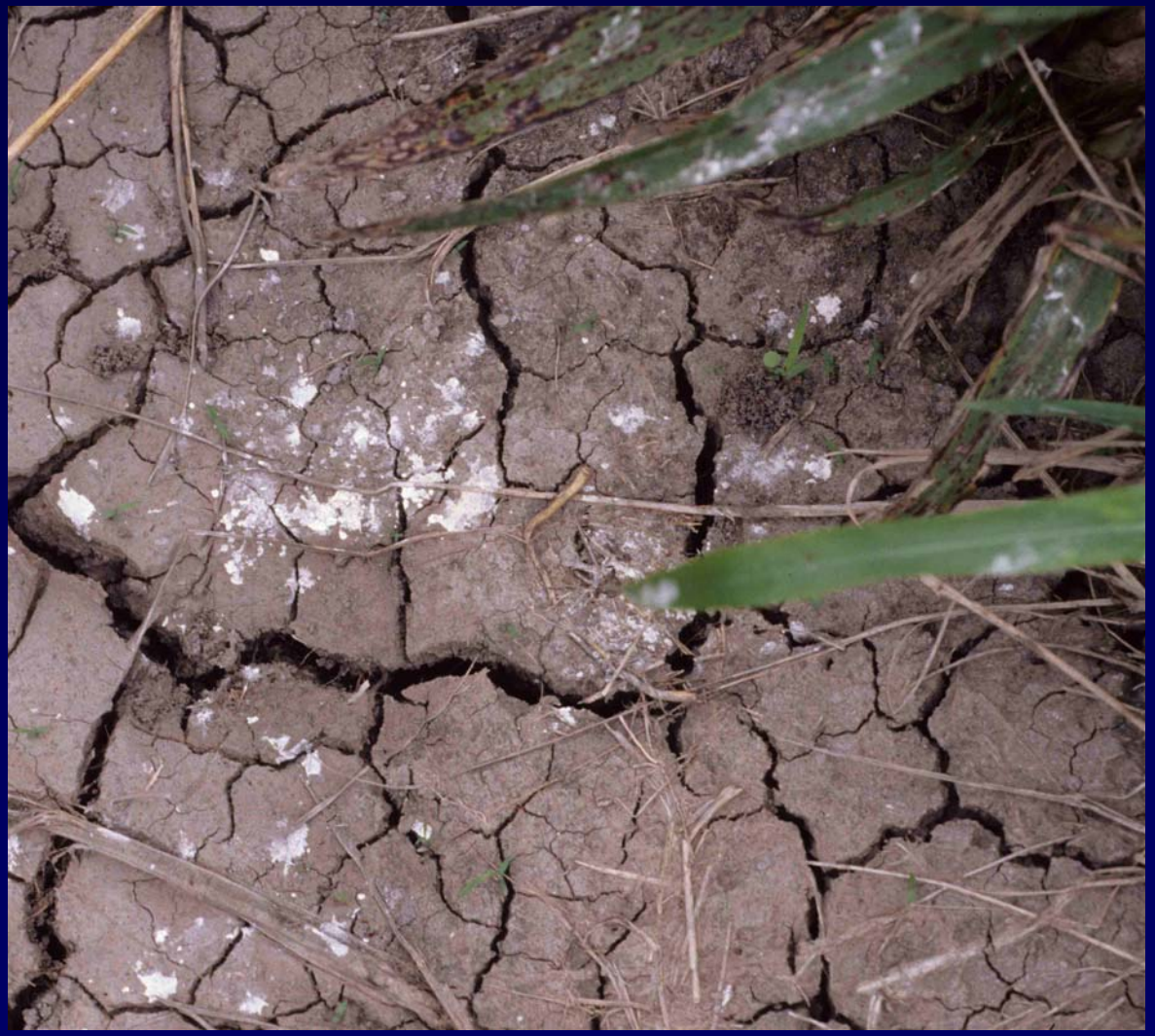
CEREBELLA (ARROWS), ANOTHER FUNGUS, WHICH GROWS ON ERGOT

ERGOT IN HYBRID SORGHUM

SORGHUM ERGOT IN AN A LINE

SORGHUM ERGOT

HONEYDEW THAT HAS DRIPPED ONTO THE GROUND



HONEYDEW THAT HAS DRIPPED ONTO SOIL AND LEAVES: SOURCE OF SECONDARY CONIDIA (WHITE)

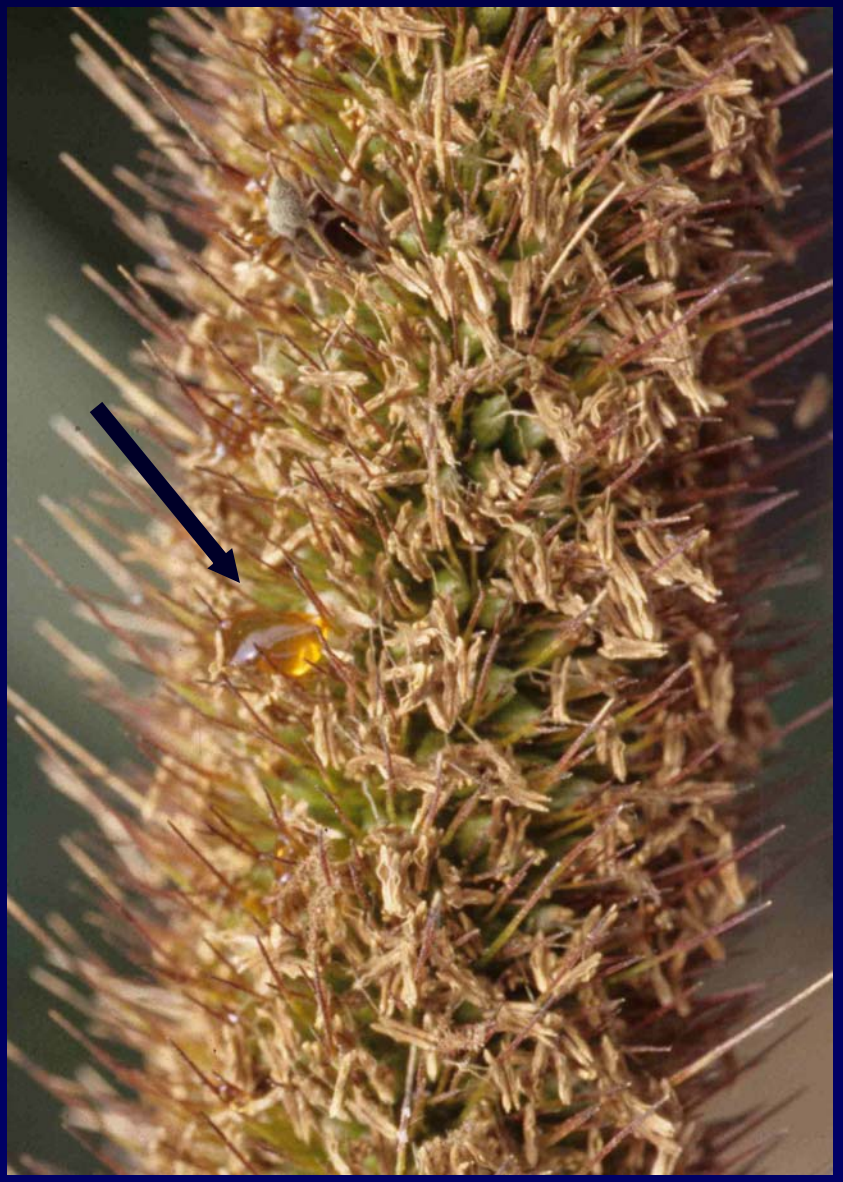
ENCRUSTED HONEYDEW

HONEYDEW-ENCRUSTED SEED

SORGHUM ERGOT:SCLEROTIA

OTHER ERGOT HOSTS

JOHNSONGRASS



PEARL MILLET

SOURCES OF INITIAL INOCULUM OF SORGHUM ERGOT

- SCLEROTIA (CONTAIN CONIDIA)
- HONEYDEW ON SEED
- CONIDIA FROM HONEYDEW DRIPPED ONTO SOIL OR PLANTS
- CONIDIA FROM INFECTED PLANTS

ORDER OF SUSCEPTIBILITY OF SORGHUM TO ERGOT

- MALE-STERILE LINES
- STERILE FORAGES
- SELF-FERTILE HYBRID WITH LOW-TEMPERATURE POLLEN STERILITY
- FORAGES (POOR POLLINATORS)

DIRECT EFFECTS OF ERGOT INFECTION

- ABSENCE OF GRAIN FROM INFECTED FLORETS
- STICKINESS INTERFERES WITH HARVEST
- REDUCED SEED QUALITY

PREDISPOSITION FACTORS FOR ERGOT INFECTION

- LOW TEMPERATURES 21 DAYS BEFORE FLOWERING (POLLEN STERILITY) (< 54 ºF AT NIGHT)
- LOW TEMPERATURES AT FLOWERING (INFECTION PERIOD)
- RAIN DURING FLOWERING