system, and losses due to the disease revealed that farmers take one or more of the following actions to avoid the disease: 1. Select only healthy panicles for food, and feed ergot-infected panicles and stover to animals; 2. Allow infected plants to dry in the field for future use as fodder, or 3. Allow cattle to graze without harvesting or drying the stover.

The possible sources of infection for sorghum ergot spread from an epidemic area of Maachinenipalli in 1999 to other administrative zones in the distriet could be either postharvest-infected panicles stored or dumped in pits, or ergot-contaminated seed movement frorn one village to another. Therefore, based on this information it is assumed that pathogen, might have moved from an area of ergot epidemic in Maachinenipalli to other locations in the district. It appears that the pathogen development was favored by the cloudy weather and high rainfall during flowering (Anahosur and Patil 1982; McLaren and Wehner 1990) and subsequently spread by wind currents (Frederickson et al. 1993). On the contrary, in Amistapur village of Bhootpur administrative zone about 80 km from Maachinenipalli the crop was absolutely free from ergot probably because there was no rain during flowering in 1999 and 2000. Even though the farmers in this village observed ergot in 1996, there was no further spread in the subsequent cropping seasons.

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Prevalence of Ergot of Sorghum in India

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Introduction

Ergot (*Claviceps sorghi* P. Kulkarni et al.. and *C. africana* Frederickson, Mantle, & de Milliano) is a serious limiting factor, in the production of sorghum [*Sorghum bicolor(L.)* Moench] hybrid seeds. Ergot can also cause widespread damage to cultivars in farmers' fields when environmental conditions favorable to the pathogen prevail at flowering (Kukedia et al. 1982). In this article we report the incidence and severity of ergot, in sorghum-growing areas in the states of Andhra Pradesh, Gujarat, Tamil Nadu, Maharashtra, Karnataka, Rajasthan and Uttar Pradesh in India.

Materials and methods

On-farm sorghum ergot surveys were conducted from August 1999 to February 2000 (Year 1), August 2000 to March 2001 (Year 2) and November 2001 to April 2002 (Year 3). A total of 250 farms in Andhra Pradesh, one in Gujarat, 413 in Maharashtra, 451 in Karnataka, 127 in Tamil Nadu, 3 in Rajasthan, and 10 in Uttar Pradesh were

Table 1. Mean incidence and severity range (%) of sorghum ergot in India from August 1999 to April 2002

Indian states	Fields		Mean ergot range[1]	
	Surveyed	With ergot	Incidence (%)	Severity (%)
Andhra Pradesh	250	92	13-61	23-93
Kamataka	451	54	27-60	36-100
Maharashtra	413	40	2-30	5-83
Tamil Nadu	127	13	0-22	0-52
Rajasthan	3	3	Trace[2]	Trace
Uttar Pradesh	10	10	52.0	45.5
Gujarat	1	1	Trace	Trace

1. Mean of 3 years' survey from August 1999 to April 2002 except for Rajasthan, Uttar Pradesh and Gujarat wherein survey was conducted only during cropping season 1999
2. < 1 % incidence and severity

surveyed. The latitude, and longitude, of each of the field surveyed was recorded using a hand-held global positioning system instrument (®1993 Magellan System Corporation, San Dimas, California, USA).

The cropping patterns in Andhra Pradesh, Kamataka, Maharashtra and Tamil Nadu included predominantly local cultivars followed by improved varieties and hybrids of sorghum. The crops were surveyed at vegetative to physiological maturity stages. Ergot incidence and severity from each field were recorded in approximately 12-m^2 areas randomly selected at three different places. Disease incidence was recorded based on the number of plants infected out of the total plants counted, and the severity on a 0-100% scale based on the number of infected florets in individual panicles. A total of 152 ergot samples (10-15 infected panicles from each field) were collected from all the three survey. The samples were placed separately in brown paper bags, air-dried and stored under laboratory conditions (25± 1 °C) for further studies at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the United States Department of Agriculture (USDA) laboratories.

Results and discussion

The most obvious external symptom of ergot observed in panicles was honeydew exudation from infected florets (Frederiksen and Odvody 2000). Honeydew was either uniformly yellow-brown to pink or superficially white matt. Sclerotial formation was observed in only a few panicles.

In Kamataka, (Table 1) ergot was observed during the first week of October (late-sown rainy-season crop) and the second week of December 1999 (early-sown postrainy-season crop). A farmer of Chitradurga, Kamataka, mentioned the occurrence of severe ergot on MSH 51 every year since 1998 in both seasons. On another farm in Talaku village (14° 27' N and 76° 40' E), in the same district, sorghum hybrid MSH 51 was heavily affected by ergot (80-90% incidence and 90-100% severity) resulting in about 70% loss in grain yield during the 1999 postrainy season. It became essential to clean grains by washing them in water to remove honeydew and to separate black structures prior to sale in the local market.

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