with molecular weights of 91, 59, 36, and 30 kDa, and a 197 kDa protein found in small amounts. The 91 kDa protein is a glycoprotein (G protein); the 59 kDa protein is likely the N protein (nucleoprotein), and the 36 and 30 kDa proteins are likely M proteins (matrix proteins).

Relationships of the species with other taxa
SSMV which is a possible *Nucleorhabdovirus,* has no serological cross reactivity with any other rhabdovirus tested.

Biological properties
Naturally infected hosts include *Sorghum vulgare* Pers. and *Zea mays* L. *Triticum aestivum* L. can be experimentally infected using the leafhopper vector. Non hosts include *Hordeum vulgare, Avena sativa, Sorghum bicolor, S. halepense,* and *S. sudanense.* The virus often exists as densely packed viral aggregates in leaf cells. SSMV can not be manually transmitted. The leafhopper *Graminella sonora* (Ball) vectors SSMV in a persistent propagative manner. Minimum acquisition and inoculation times were 6 and 1 hr, respectively. The minimum latent period was 9 days at 30 C. *Graminella nigrifrons* (De Long) and Mohr and *Peregrinus maidis* (Ashmead) do not vector SSMV.

Diagnosis and identification
SSMV can be diagnosed serologically using ELISA or western blot and specific virus antisera.

Agronomical aspects
The virus causes chlorotic streaking and mottling of maize leaves, stunting of plants, and reduced seed set. SSMV has been found primarily on fall seeded maize and sorghum. The virus was transmitted very efficiently by its leafhopper vector only at higher temperatures, 24-36°C.

It is not known how the virus exists in nature in the absence of its three known hosts, since alternate hosts have not been identified. At present, disease management entails rotating away from those crops.

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Sorghum yellow banding

Sorghum yellow banding virus (Unassigned virus)
Data collated by M.J. Garrido

General description of the causal virus species
Sorghum yellow banding virus (SYBV) was first reported from USA in 1987. It has been reported from USA and Venezuela and its agronomical importance is not known.

Virion properties
Virions are isometric, *c.* 25 nm in diameter (Photo 4.16), and have an estimated S_{20w} of *c.*109. They contain a single capsid protein of *c.* 29 Kda. The buoyant density in CsCl is 1.386 g/cm^3. Virions can be purified by extraction in 0.1 M potassium phosphate

buffer at pH 7.0 with mercaptoethanol, clarification with chloroform-butanol followed by differential centrifugation and sucrose density gradient separation.

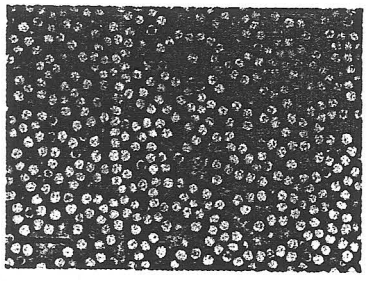

Photo 4.16 Electron micrograph of isometric particles in a purified preparation of Sorghum yellow banding virus. Bar represents 100 nm.

Organization of the genome

Genome consists of single-stranded RNA of *c.* 1.5×10^6 MW. Two double stranded RNAs (3.0×10^6 and 0.6×10^6 MW) have been isolated from infected maize and hybridize with cDNA prepared against the virion RNA.

Relationships of the species with other taxa

SYBV is not serologically related to several other small well-characterized isometric viruses that infect the *Poaceae*. It has not been characterized to the extent that a family group of viruses.

Biological properties

Sorghum spp. are the only natural host of SYBV. The inoculated host range includes, *Pennisetum*, *Setaria* and *Zea*. In infected maize (*Zea mays* L.), a large reduction in starch accumulation have been noted in the chloroplasts; mitochondria appear swollen and contain reduced and irregular cristae. In sorghum (*Sorghum bicolor* (L.) Moench), the plastids appear disrupted and contain many virions; myelin bodies and mass of fibrous material have been reported in the cytoplasm (Photo 4.17). SYBV is mechanically transmitted with difficulty (2-12%) and symptoms occur 15-25 days after inocu-

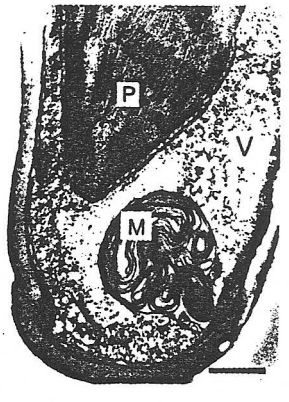

Photo 4.17 Cytological alterations induced by **Sorghum yellow banding virus** in sorghum cv QL-11. Note a myelin body (M), plastid (P) somewhat disrupted containing isometric particles, and many virus particles (V) in the cytoplasm. Bar represents 600 nm.

lation. It is not transmitted by sorghum seeds. Inoculation with an airbrush and by vascular puncture of maize seeds increase the transmission. The virus presents a high stability in sap. Vectors have not been reported yet. However, some results evidence that a mechanism through the soil could be involved in the transmission of SYBV.

Diagnosis and identification

SYBV can be detected by mechanical inoculation to sorghum cultivars, or by serological methods (*e.g.* agar double-diffusion tests, ELISA).

Agronomical aspects

The characteristic symptoms of SYBV on sorghum are yellow speckles, streaks and bands with chlorosis. As infection progresses, the plants became dwarfed, chlorotic, and eventually died. Typically, symptoms appear on ratoon growth, but they may appear on first growth too. Effects of SYBV on yield in natural conditions are unknown. Under greenhouse conditions the infected plants present lag in flowering, decrease of the size and weight of the plant, reduction in length and weight of the panicle and smaller dry matter accumulation. The panicle weight is the yield component more affected by the virus. SYBV reappears in the same fields repeatedly and wild sorghum (*S. verticilliflorum*) is an alternate host for the virus. Aphids did not transmit the virus and the vector or mode of transmission is unknown. Control measures have not been reported.

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Sugarcane mosaic

Sugarcane mosaic potyvirus

Data collated by Michael P. Grisham and Stanley G. Jensen

General information on the virus (see description inside *Sugarcane mosaic virus* (SCMV) on sugarcane).

Agronomic aspects

The most common strain of SCMV reported on sorghum, MDB, causes irregular yellow to dark-green mosaic symptoms on the leaves. The virus can also cause a reddish discoloration of leaves in certain genotypes when temperatures drop below 21°C. Although SCMV-MDB and *Maize dwarf mosaic virus* (MDMV) cause mosaic on sorghum, of the two, only MDMV infects Johnsongrass. SCMV-MDB is the more common cause of mosaic in sorghum in the more temperate regions and at higher elevations. Virus concentration was higher among the cultivars expressing the red-leaf symptoms