№ 49-50 July - December, 2011

# CACnews




## This Issue in Brief:

tomatoes under humid conditions. In Uzbekistan the disease is most destructive in winter and spring seasons (December-April) in greenhouses, when environmental conditions are more favorable for development of the pathogens. In the absence of control measures, large portions of the leaves can be killed resulting in significant yield reduction.

The management of the disease in tomato greenhouses is based on several cultural measures such as good ventilation of the greenhouse, control of the greenhouse temperature, drip irrigation or avoidance of watering of leaves during irrigation, and adequate plant and row spacing. There is a data that fungus can easily spread in a big area and makes necessary the use of chemicals. The purpose of experiment conducted in tomato greenhouse located in Tashkent region, Zangiota distict was to introduce the biological control of leaf mould appeared in tomato leaves with use of such effective microorganisms as Baikal EM 1 as a biological agent against diseases, as well as an alternative source of fertilizers, growth stimulators and immune inductors.

Effective microorganisms (EM) were discovered and developed 17 years ago by a Japanese agronomist Teruo Higa. So far application of this preparation has been in demand worldwide as fertilizers, growth stimulators and natural biological fungicides. Preparation Baikal EM 1 has been modified of effective microorganisms by group of Russian microbiologists in 1998 and differs from Japanese preparation as it contains mostly lactic bacteria instead of photo synthesized strains. One of the advantages of this preparation is that it consists of different types of beneficial microorganisms: actinomycetes, bacteria, yeasts and fungus that can suppress the pathogen microorganism growth and enrich soil with useful microflora and nutrients.

During experiments best results were obtained in option where tomato plant seedlings and soil were treated with Baikal EM 1. Besides obtained high yield there were no any diseases noticed in this option during the plant growth comparing to others, where in some tomato leaves leaf mould disease occurred.

In treating with preparation Baikal EM 1 soil beneficial fermentations were performed including the breakdown of complex organic molecules into simple organic molecules and inorganic nutrients such as amino acids, vitamins and antioxidants (all contribute to enhanced plant growth). These soils were generally characterized with a pleasant fermentative odor and had favorable for plant growth soil physical properties. Moreover, despite being dominant with anaerobic microbes there were few pathogenic fungi or bacteria and the production of methane, ammonia and carbon dioxide were minimized. Treated soils in tomato greenhouse contained significant populations of microorganisms that fix atmospheric nitrogen and carbon dioxide into amino acids, carbohydrates and proteins.

In conclusion, owing to Baikal EM 1 applied in tomato greenhouse in Tashkent region, the environmentally friendly control of leaf mould was accomplished, as well as soil enrichment with nutrients that stimulate growth and induce immunity in plants.

**Barno Tashpulatova,**
**ICARDA-CAC Integrated Pest Management Project**

Initial (left) and final (right) stages of tomato leaf mould in greenhouse conditions
(Photo by Barno Tashpulatova)

## New variety of pearl millet introduced in Uzbekistan

To assist National Agricultural Research Systems (NARS) in their breeding programs and efforts on rehabilitation of salt affected and abandoned lands, the International Center for Biosaline Agriculture (ICBA) and the International Crops Research Institute for the Semiarid Tropics (ICRISAT) supplied a set of improved lines and high-yielding accessions of pearl millet for study under specific regional conditions.

This alternative crop has been introduced to the agricultural system in all Central Asian countries for the first time. Screening of more than 52 improved lines of pearl millet through on-station and participatory on-farm trials under different filed management practices identified Sudan Pop III, Guerinian-4, IP 6104, IP 6112, IP 131150, IP 19586, HHVBC Tall, ICMV 7704 and MC 94 C2 as the most salt/drought tolerant and highly productive varieties for food and forage production. They demonstrated about 30% higher dry fodder and 25% higher seed yield than local varieties. The high morphologic diversity in grain size, color and number of grain/panicle were observed as distinctive features for majority of the screened varieties of pearl millet.

Based on the experiments conducted by Uzbek Scientific Research Center of Agriculture at Corn Station in Zangyota district, Tashkent region in 2007-2011, a new promising dual-purpose variety of pearl millet “Hashaki 1” was introduced. This new variety was selected as a result of series of cross-pollinations of HHVBC Tall variety (ICRISAT) with local varieties.

Explaining advantages of new pearl millet Hashaki 1 variety to local farmers in field of Bayavut (Farmer Imomjon Mamurov (in the middle), Syrdarya region, Uzbekistan)
(Photo by Mukhiddin Khujanazarov)

"Hashaki 1" was submitted by national breeders to the State Variety Testing Committee (SVTC) for testing and release under different environmental conditions in Uzbekistan in 2010-2011. In 2011 "Hashaki 1" was recognized as a promising variety to be evaluated under different soil and climatic conditions as salt-drought and heat tolerant dual purpose crop. Farmers showed interest to cultivate it mostly for forage (green biomass and silage).

Relative growth rates, biomass (fresh and dry) and grain production of the new released variety exceeded the local varieties by 2-2.5 times. As early maturing pearl millet material "Hashaki 1" performed well in dryland saline environments and could be widely planted as main crop in early spring or as second crop after the wheat harvest or in rice rotation system.

At the moment seed production of this high-yielding variety is under development in order to provide high quality, certified seeds for increasing needs of biosaline agricultural production in Uzbekistan. The main objective of seed production of "Hashaki 1" variety is rapid multiplication by maintaining the varietal identity (a spatial filed isolation of about 1000 m with periodically renovation from breeder seeds) and genetic purity.

| | | |
|---|---|---|
| Average plant height | 207cm | The variety is distinguished by its expressive tillering and re-growing ability. Number of basal tillers ranging 3-32 |
| Plant density: | 90-110 (A)<br>180-220 (B) | A - as main crop for grain production; distance between rows - 60-70cm;<br>B- summer crop for forage with distance between rows - 30-35cm |
| Period of vegetation (from seed germination until seed maturation) | 90-86 days | Testing Assessment (1-5): Drought tolerance index - 5; Lodging index - 5; Frost tolerance index - 4; Stem fragility - 5 |
| Green biomass | 36.07 t/ha | The average yield of green biomass after two cuts varies 45.0 t/ha comparatively with local varieties 27.68 -30.54 t/ha |
| Absolute dry substances | 14.43 t/ha | Two cuts: (first at time to 50% flower) and second cutting – before autumn frosts. |
| Grain yield | 2.96 t/ha | Weight of 1000 seeds-11.8 g; Average weight of panicle with seeds-38,3 |
| Content of juice in the stems | 62.5% | Well used for all kind of livestock; showed good palatability. |

**Characteristics of some morphological, biological and agronomic traits of new promising local variety named "Hashaki 1" (average data 2007-2011)**

**Kristina Toderich, ICBA-CAC**

# NEW PROJECTS

## ICARDA starts new project on rangeland improvement

The project "Improving Local Institutions for Better Coordination of Common Rangelands Use and Management in Uzbekistan: An Environmental Governance Approach" is funded by the German Federal Ministry for the Environment, Nature Protection and Nuclear Safety (BMU) within the International Climate Change Initiative based on the decision of the Parliament of the Federal Republic of Germany. Project duration is from October 2011 until September 2012, with the intention to closely follow up activities and results for about one more year. The project will support climate change adaptation of pastoralists in Uzbekistan.

The project establishes Pastoral User Groups (PUG) and introduces technological and social innovations which support growth of a broader range and a higher amount of forage. Free grazing will be controlled within the project. Pastoralists will discuss and learn systematic seasonal grazing management within several workshops. Grazing management will also be supported by the establishment of seed isles protected either by iron fence or social fence. The seed isles at various sites on the rangelands contain seeds of different perennial rangeland species and shall assure that seeding can take place even in years with overgrazing. The fenced seed isles on the rangelands itself will also prevent loss of forage species.

**Villagers from Gulbog develop a local climate change adaptation strategy, based on water footprint of products and income per product, diversification of agricultural and livestock production.**
**(Photo by Stefanie Christmann)**