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# INTEGRATED CONTROL STRATEGIES FOR SUGARCANE DISEASE

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## ABSTRACT

Sugarcane diseases are one of the major factors for low cane and sugar yield. Major diseases are red rot (*Collectotrichum fallcatum*, Went), whip smut (*Ustilago scitaminies* H. Sydon), Pokkah boeng (*Fusarium moniliformae* Schold), Brown Stripe (*Dreshelela sacchari* Drech), Leaf Spot (*Helminthosporium halodes*), sugarcane rust (*Puccinia melanocephala*) and Sugarcane mosaic. New red rot strains have developed which is another danger for the crop. These strains are developed in the area of north Punjab due to climatic conditions most suited for sugarcane diseases. In the recent years due to successive pre-monsoon rains, red stripe and pokkah boeng diseases have been spreading in the north and central Punjab. We must have a serious look upon it. Many unapproved varieties like SPF-238, CO 1148, CP70-1547 have attacked by the diseases. Integrated control management strategies of sugarcane disease are discussed in this paper.

KEY WORDS: Sugarcane, Diseases, Management and control.

## INTRODUCTION:

Sugarcane diseases are either seed borne or soil borne, therefore, once the disease has spread in the field, it is almost impossible to control it even with agro-chemicals. The disease incidence can be minimized by adopting one or more control measures. No single method is successful for the control of sugarcane diseases. Integrated management of sugarcane diseases is the most suitable approach for controlling all the diseases. It includes agronomical, cultural, chemical and biological control measures.

The integrated pest management is defined by Atwal, (1991) as "it is an integrated approach that aims at reducing pest status to tolerable levels by using methods that are effective, economically sound and ecological compatible. Different integrated methods of the control of different diseases are discussed this paper.

## SUGARCANE DISEASES IN PUNJAB / PAKISTAN

### Fungal diseases

1. Red Rot (*Collectotrichum falactum* Went.)
2. Whip smut (*Ustilago scitaminea* H. Sydon)
3. Pokkah boeng (*Fusarium moniliformae* Schold)
4. Brown Stripe (*Dreshelela sacchari* Drech)
5. Leaf Spot (*Helminthosporium halodes*)
6. Sugarcane rust (*Puccinia melanocephala*)

### Bacterial Diseases

1. Red Stripe (*Xanthomonas rubrilineans*) (Lee stap)
2. Ratoon stunting disease (*Clavibactor xyli*)

### Virus and Mico-plasma

- Sugarcane mosaic
- White leaf
- Chorotic streak

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## DIFFERENT INTEGRATED METHODS FOR THE CONTROL OF SUGARCANE DISEASES

The following ten integrated methods are most effective for controlling the sugarcane diseases.

1. Use of agronomical methods.
2. Resistant varieties.
3. Legislation.
4. Thermotherapy.
5. Chemical treatments.
6. Rouging of diseased clumps.
7. Use of long setts.
8. Good field hygiene.
9. Collateral hosts.
10. Disinfection of seed cutters.

### 1. Use of Agronomical Methods

- Burning of trash
- Crop rotation
- Use of healthy seed
- Drainage in fields
- Avoid rationing of diseased crop
- Clean cultivation

### 2. Resistant Varieties

The Sugarcane Research Institute Faisalabad has been evolved which are resistant to sugarcane diseases.

Approved varieties		Un-approved varieties		Susceptible varieties	
CP 43-33	R	S96-SP-1215	MR	CO-1148	S
CP 72-2086	R	S98-SP-108	R	L-116	S
CP 77-400	R	CP 82-1172	R	L-118	MS
SPF-213	R	S2001-US-1	R	TRITON	S
CPF-237	R	S2001-US-400	R	BF-162	MS
HSF-240	MR	S2001-US-104	R	SPF-238	S
HSF-242	MR	S2001-US-750	R	SPF-241	S
CPF-243	R	S97-US-110	MR	CoJ-84	MS
SPF-245	R	S97-US-127	R	CP 70-1547	S

### 3. Legislation

To avoid introduction of diseases quarantine of seed material and varieties between states is highly essential.

### 4. Thermotherapy

Hot water treatment at 52 °C for 18 minutes is highly useful for controlling all sugarcane diseases. (Joshi, 1954; Anwar, et al. 2006)

### 5. Chemical Control

Seed treatment before sowing with the following fungicides is very useful for the control of sugarcane diseases.

1. Dithan M-45 1:400 (0.25%)
2. Vitawax 1:800 (0.125%)
3. Benlate 1:1600 (0.062%)

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## REFERENCES

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Atwal, A.S. 1991. Agricultural pests of India and South East Asia. Kalyani Publishers, Ludhaina. PP. 330-343.

Joshi, N.C. 1954. Hot water treatments of setts for the control of red rot and smut diseases of sugarcane. Indian sugar, N.S., 4, PP. 2.

## 6. ROUGING OF DISEASED CLUMPS

Disease free seed nursery is desired to be established in each mills farm and farmer's field in which diseased clumps should be roughed out.

## 7. USE OF LONG SETTS

Three or four budded setts are very suitable seed setts for the control of soil born inoculums of red rot, root rot and pineapple disease

## 8. GOOD FIELD HYGIENE

Extreme dry and wet soils should be avoided for the control of red rot and root rot diseases.

## 9. COLLATERAL HOSTS

Collateral hosts like sorghum should not be grown in the vicinity of sugarcane crop for the control of sugarcane mosaic virus when the grass hoppers are fed and spread SCMV.

## 10. DISINFECTION OF SEED CUTTER

Dipping of seed cutters in the detole solution or surf washing powder while cutting the seed setts is very useful for the control of sugarcane Mosaic Virus.