

ADVANCED SUGARCANE PRODUCTION TECHNOLOGY

By

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Comparison with World (2011-12)

Item	Ranking
Sugarcane production	05
Area under sugarcane	05
Production of sugar	08
Per acre yield	54

Sugarcane in Pakistan

Provinces	Area (000 ha)		Production (000 tonnes)		Yield (t ha ⁻¹)		Sugar recovery (%)	
	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13	2011-12	2012-13
Punjab	761.20	767.67	42893.00	42982.07	56.34	56.00	9.68	9.92
Sindh	245.00	253.69	14455.00	15966.22	59.00	63.00	9.72	10.50
KPK	94.40	106.73	4325.50	4770.23	45.82	44.7	9.55	9.23
Baluchistan	0.70	0.70	31.40	31.00	44.85	45.00	--	--
Pakistan	1046.00	1128.10	58038.20	63718.52	55.48	56.50	9.65	9.88

Approaches

Horizontal

Increase in yield by increasing cane area

Vertical

Increase in per acre yield

1. Pre planting management

- Soil type
- Machinery available
- Irrigation resources
- Technical know how
- Financial resources

2. Management at planting



- Preparation of land
- Planting method
- Time of planting
- Variety selection
- Seed rate

3. Management after planting

- Integrated weed control
- Integrated insect pests & diseases control
- Integrated nutrient use
- Earthing up of crop
- Irrigation scheduling

4. Management at maturity & harvesting

- Stoppage of irrigation
- Avoid late N application
- Scheduled harvesting
- Right method of cutting

SELECTION OF SOIL

- Fertile loamy soils
- Well drained and free of salts
- Should contain sufficient quantity of organic matter

PREPARATION OF SOIL

- Once rotavator or twice disc harrow for chopping stubbles
- Deep ploughing (cross chiseling)
- 3-4 cultivation followed by planking
- Precise land leveling

PLANTING METHOD



- **Make 12-14 inches deep trenches at 4 feet apart**
- **End to end placement of cane setts in two rows**
- **Cover with thin layer of soil (1-1.5 inches)**
- **Irrigate 1/3 of the trench just after planting**



SEED RATE

Cane weight basis

- Thick varieties: 100-120 maunds per acre
- Medium varieties: 80-100 maunds per acre
- Thin varieties: 80 maunds per acre

Setts basis

30000 double budded setts per acre

Area basis

12-16 *marlas* per acre

SEED QUALITY

- Free of diseases and insect attack
- Free from mixture of other varieties
- Trash free seed

VARIETY SELECTION

Early maturing varieties (Nov-Dec)

CPF 237, CP 77-400, CP 72-2086, HSF 240, HSF 242

Medium maturing varieties (Dec-Jan)

SPF 245, SPF 234 (for Southern Punjab only), SPF 213, CPF 246, CPF 247, CPF 248

PLANTING TIME

Autumn

1st September to 30th September

Spring

15th February to 15th March

INTEGRATED NUTRIENT MANAGEMENT

Organic sources

- Two tonnes (2 trollies) well rotten FYM or Press mud per acre
- Green manuring



- Crop rotation with restorative crop (legumes crop)

Chemical sources (bags per acre)

At time of planting	45 days after planting	75 days after planting	100 days after planting
2 DAP+2 SOP	1 urea	1 urea	1 urea
OR			
6 SSP+2 SOP	1 urea	1 urea	1 urea
OR			
4 NPK	1 urea	1 urea	1 urea

INTEGRATED WEED CONTROL

Chemical Control

- Ametryn + Atrazine @ 1kg per acre
- Ethoxysulfuron @ 20g per acre for *Deela* control

Mechanical control

- Inter-culture 2 times in *Wattar* & dry soil conditions after 45 & 75 days of planting



SUGARCANE DISEASES

- Red rot
- Whip smut
- Pokkahboeng
- Red stripe
- Rust
- Mosaic
- Wilt
- Leaf spot

MANAGEMENT

- Seed treatment
- Crop rotation
- Cultivation of resistant varieties
- Growing separate nursery of approved varieties
- Prevention of irrigation water from infected field to healthy one

INSECT PESTS

Primary insect pests

- Top borer of sugarcane
- Stem borer of sugarcane
- Root borer of sugarcane
- Gurdaspur borer of sugarcane
- Leaf hopper / Pyrilla
- Whitefly of sugarcane
- Black bug of sugarcane

Secondary insect pests

- Mealy bug
- Termites
- Mites

New insect threats

- Early shoot borer

- Chinch bug
- Sugarcanebeetle

INTEGRATED INSECT PEST MANAGEMENT

Physical & cultural control

- Avoid ratooning of heavily infested field
- Destroy the crop residues before 15th of March
- Timely planting of crop
- Use of light traps from March to October



Bio control

- Use 16-20 *trichogramma* cards per acre after 15 days interval from April to September
- Encourage natural enemies i.e. *Epiricania*, *Crysoperla*, mite destroyer lady bird beetle etc.
- Avoid to spray the crop to conserve the natural enemies

Chemical control

The efficiency of chemical control depends upon:

- Correct selection of pesticides
- Right dose of pesticides
- Application at proper time
- For borers

Insecticide	1 st (at Planting)	2 nd (45 DAP*)	3 rd (90 DAP*)	Total
Fipronil / Carbofuran	8	8	16	32

For pyrilla

- Apply Chlorpyrifos 40 EC @ 2 L/acre or Fipronil 5% @ 1 L/acre with irrigation at lateral stages

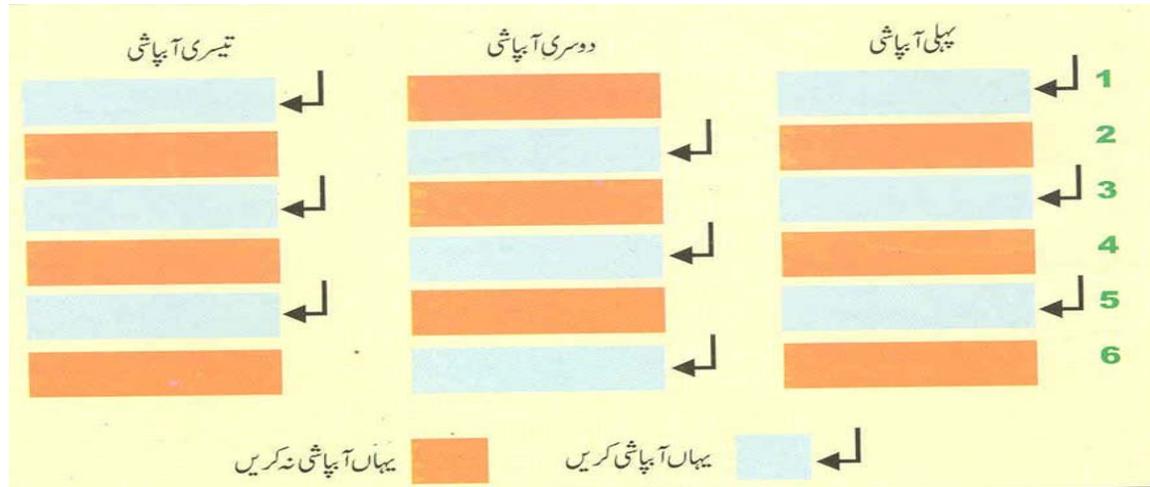
For blackbug

- Spray crop with 480 mL Fipronil or Bifenthrin 250 mL in 120 litres of water per acre

IRRIGATIONS*

Month	Number of irrigations	Period
March-April	3	18-20
May-June	5	10-12
July-August	3	13-15
September-October	3	15-22
November-January	2	40-50
	16	
*Subject to the soil and weather conditions In case of water shortage and during the months of high temperature apply water by alternate skip irrigation method		

Alternate skip irrigation method





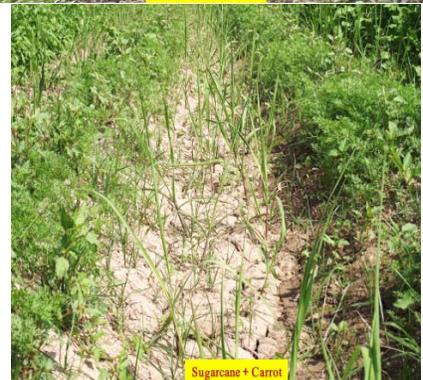
EARTHING UP

After 90-100 days of planting



INTERCROPPING

- All winter vegetables, berseem, sunflower, early maturing brassica, lentil and gram can be inter-cropped with September planted crop
- Inter-cropping in spring planted sugarcane should be avoided





Sugarcane + Onion

HARVESTING

- Stop irrigation 25-30 days before harvesting
- Cut cane at ground level 1-1 ½ inch below
- Harvest ratoon crop first & then early, medium and late varieties



- Harvest lodged crop first preferably
- Harvest rodents attacked crop as soon as possible

RATOON MANAGEMENT

- Keep ratoon from the crop which is free of diseases and insect pests
- Gap filling must be done
- Keep ratoon of February – March harvested crop
- If harvested before February then cover stubble with trash to protect against frost
- Incorporate trash in soil using disc ratooner
- Use stubble shaver
- Apply 30% more N fertilizer
- Control weeds



Stubble shaver

FUTURE THRUST

- Evolution of site specific varieties
- Site specific production technologies
- Mechanized sugarcane farming
- Resource conservation technologies
- Cost effective planting techniques
- Supply of approved varieties' seed to millers & cane growers



Sprouting

