



## **Measuring Food Waste Generation in Manipal University Jaipur**

Food waste is a pressing global issue, and universities, with their large dining facilities and diverse student populations, are not exempt from contributing to this problem. Measuring the extent of food waste generated in universities is a crucial step in addressing this issue and promoting sustainability on campus. Manipal University Jaipur quantifies food waste in the institutions.

Manipal University Jaipur has a social responsibility to ensure that food resources are distributed equitably. Reducing waste can free up resources to support food security initiatives and reduce hunger on campus. The significance of measuring food waste in the university has environmental impact, Food waste in university has environmental consequences. Manipal University Jaipur spends significant budgets on purchasing, preparing, and serving food. (Picture1)

Manipal University Jaipur measures food waste, conducting regular waste audits involves collecting and sorting food waste to determine its composition and volume. (Picture 2) This hands-on approach provides detailed insights into what, when, and why food is being wasted. Manipal University Jaipur weighs the food waste generated at various points in the food service process, such as kitchen prep, serving lines, and dining areas. (Picture 3) This data is tracked over time to identify trends and areas for improvement. Manipal University Jaipur employs surveys and innovative technologies like smart bins equipped with sensors to gather real-time data on food waste. (Picture 4) These methods provide a more comprehensive understanding of consumer behavior.

Accurate data on food waste allows Manipal University Jaipur to identify specific areas where waste occurs most frequently. This enables them to implement targeted strategies for waste reduction(Picture 5, 6, 7). By reducing food waste, Manipal University Jaipur can work efficiently on purchasing and disposal costs, making dining operations more financially sustainable. Measuring food waste aligns with the university's commitment to sustainability, helps in reducing Manipal University Jaipur's environmental footprint and meet sustainability goals. The process of measuring and reducing food waste provides educational opportunities for students. It fosters awareness and encourages responsible consumption habits that students can carry forward.



Measuring food waste generated in the university is an essential step towards promoting sustainability, reducing costs, and fulfilling social responsibilities. By employing methods such as waste audits, weighing, tracking, surveys, and technology, Manipal University Jaipur gains valuable insights into their food waste patterns. With this data in hand, Manipal University Jaipur develops targeted strategies to minimize waste, become economically efficient, and contribute to a more sustainable future. Manipal University Jaipur leads by example and inspires the next generation to adopt responsible food consumption practices, and measuring food waste is a key part of that endeavor.

### SOLID KITCHEN WASTE MANAGEMENT

Sl.No.	Department	Waste Type	Quantity (kg)	Frequency	Clearance	Remarks
1	...	...	...	...	...	...
2	...	...	...	...	...	...
3	...	...	...	...	...	...
4	...	...	...	...	...	...
5	...	...	...	...	...	...
6	...	...	...	...	...	...
7	...	...	...	...	...	...
8	...	...	...	...	...	...
9	...	...	...	...	...	...
10	...	...	...	...	...	...
11	...	...	...	...	...	...
12	...	...	...	...	...	...
13	...	...	...	...	...	...
14	...	...	...	...	...	...
15	...	...	...	...	...	...
16	...	...	...	...	...	...
17	...	...	...	...	...	...
18	...	...	...	...	...	...
19	...	...	...	...	...	...
20	...	...	...	...	...	...
21	...	...	...	...	...	...
22	...	...	...	...	...	...
23	...	...	...	...	...	...
24	...	...	...	...	...	...
25	...	...	...	...	...	...
26	...	...	...	...	...	...
27	...	...	...	...	...	...
28	...	...	...	...	...	...
29	...	...	...	...	...	...
30	...	...	...	...	...	...

Collection frequency & clearance: Twice a day  
Time: 9:00 AM & 4:00 PM

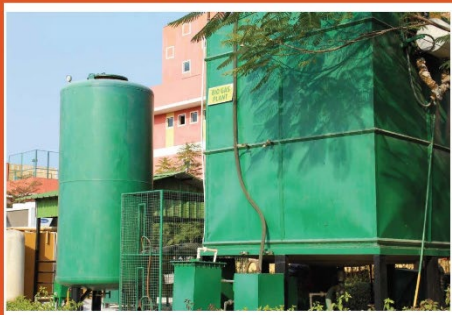


### DISPOSAL OF SOLID WASTE - INHOUSE

**Solid Waste Management**

1. Organic waste from kitchen and horticulture used in **Biogas Plant** which supplies fuel to Food Court.
2. Recyclable solid waste collected separately
3. Pilot project with BEIL (Bharuch Enviro Infrastructure Ltd) for converting MSW to Fuel / Energy.
4. Bio Medical waste is collected separately and Disposed
5. Papers printed on one side are not discarded but reused.

➤ [Agreement for external agency for partial waste management \(click here\)](#)



Bio-Gas generation system  
30kg of Gas per day with 500 kg of Kitchen waste



Picture 1: Cold Room for food storage





Picture 2: Garbage Segregation in Garbage Segregation Area



Picture 3: Garbage Segregation done at MUJ





Picture 4: Installation of Smart Bins and waste oil tins for scrap and Recycling

DATE 29/10/23

PLATE WASTAGE FOOD RECORD

SECTION	IN KG
BREAKFAST →	75 kg
LUNCH →	280 kg
DINNER →	408 kg
TOTAL ⇒	763 kg

763 KG PLATE WASTAGE COULD HAVE FED 1271 PEOPLE  
PLEASE DON'T WASTE FOOD



Picture 5: Daily food waste measurement in the mess and displayed



Picture 6: Food Waste reduction awareness messages in the MUJ Premises



Picture 7: Food Waste reduction awareness messages in the MUJ Premises

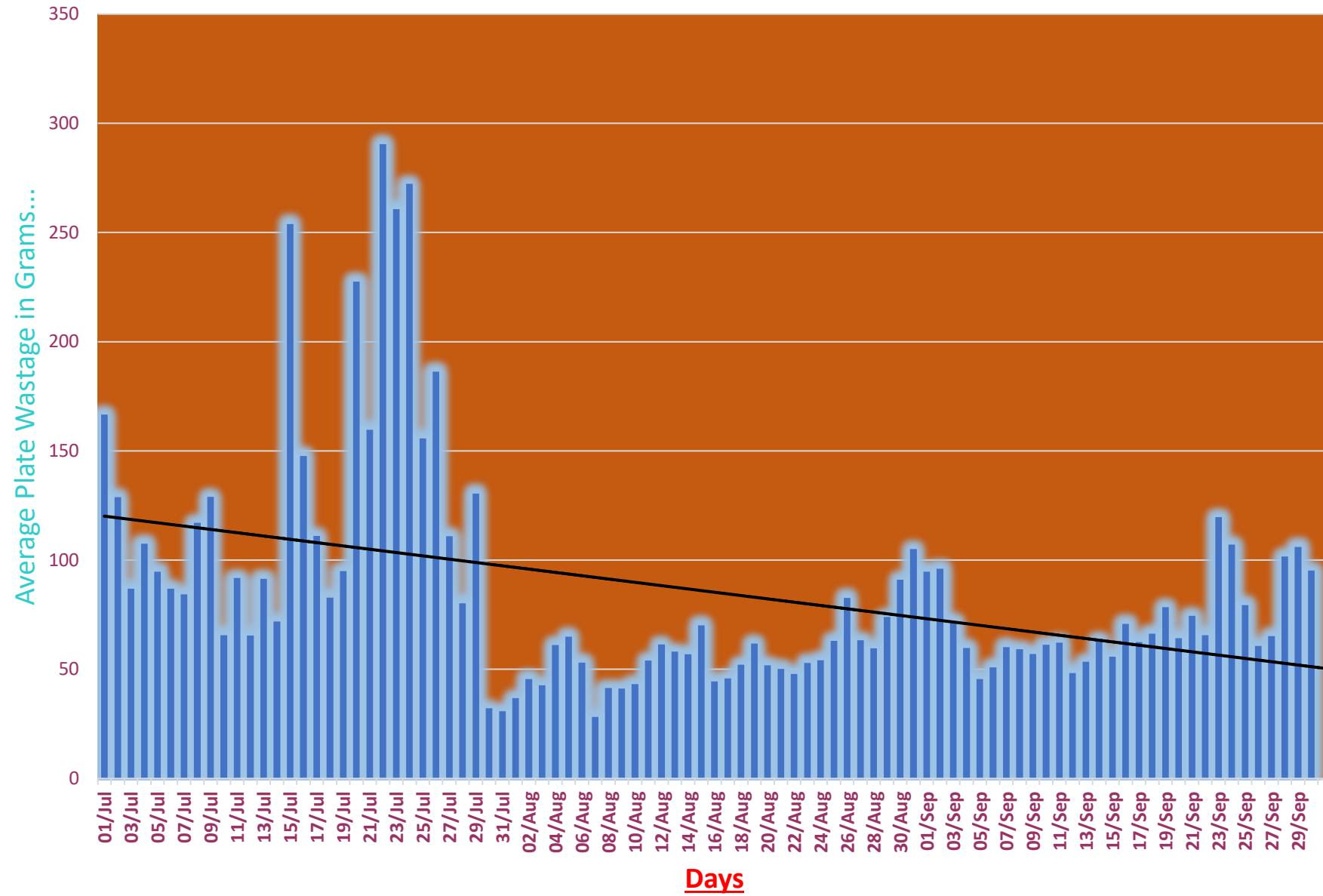


Date	Student count	Total Weight	wastage average	Date	Student count	Total Weight	wastage average	Date	Student count	Total Weight	wastage average
1-Jul	6500.00	27	0.00	1-Aug	6500.00	266	0.04	1-Sep	6500.00	520	0.08
2-Jul	6500.00	21	0.00	2-Aug	6500.00	364	0.06	2-Sep	6500.00	470	0.07
3-Jul	6500.00	24	0.00	3-Aug	6500.00	310	0.05	3-Sep	6500.00	498	0.08
4-Jul	6500.00	30	0.00	4-Aug	6500.00	456	0.07	4-Sep	6500.00	567	0.09
5-Jul	6500.00	27	0.00	5-Aug	6500.00	371	0.06	5-Sep	6500.00	460	0.07
6-Jul	6500.00	24	0.00	6-Aug	6500.00	379	0.06	6-Sep	6500.00	489	0.08
7-Jul	6500.00	23	0.00	7-Aug	6500.00	238	0.04	7-Sep	6500.00	455	0.07
8-Jul	6500.00	24	0.00	8-Aug	6500.00	342	0.05	8-Sep	6500.00	586	0.09
9-Jul	6500.00	29	0.00	9-Aug	6500.00	346	0.05	9-Sep	6500.00	491	0.08
10-Jul	6500.00	21	0.00	10-Aug	6500.00	378	0.06	10-Sep	6500.00	519	0.08
11-Jul	6500.00	27	0.00	11-Aug	6500.00	386	0.06	11-Sep	6500.00	627	0.10
12-Jul	6500.00	21	0.00	12-Aug	6500.00	410	0.06	12-Sep	6500.00	476	0.07
13-Jul	6500.00	30	0.00	13-Aug	6500.00	343	0.05	13-Sep	6500.00	567	0.09
14-Jul	6500.00	22	0.00	14-Aug	6500.00	379	0.06	14-Sep	6500.00	581	0.09
15-Jul	6500.00	66	0.01	15-Aug	6500.00	466	0.07	15-Sep	6500.00	480	0.07
16-Jul	6500.00	35	0.01	16-Aug	6500.00	421	0.06	16-Sep	6500.00	542	0.08
17-Jul	6500.00	34	0.01	17-Aug	6500.00	445	0.07	17-Sep	6500.00	505	0.08
18-Jul	6500.00	28	0.00	18-Aug	6500.00	471	0.07	18-Sep	6500.00	568	0.09
19-Jul	6500.00	36	0.01	19-Aug	6500.00	574	0.09	19-Sep	6500.00	604	0.09
20-Jul	6500.00	76	0.01	20-Aug	6500.00	494	0.08	20-Sep	6500.00	611	0.09
21-Jul	6500.00	61	0.01	21-Aug	6500.00	588	0.09	21-Sep	6500.00	671	0.10
22-Jul	6500.00	79	0.01	22-Aug	6500.00	497	0.08	22-Sep	6500.00	689	0.11
23-Jul	6500.00	79	0.01	23-Aug	6500.00	577	0.09	23-Sep	6500.00	924	0.14
24-Jul	6500.00	107	0.02	24-Aug	6500.00	551	0.08	24-Sep	6500.00	906	0.14
25-Jul	6500.00	76	0.01	25-Aug	6500.00	614	0.09	25-Sep	6500.00	716	0.11
26-Jul	6500.00	98	0.02	26-Aug	6500.00	600	0.09	26-Sep	6500.00	601	0.09
27-Jul	6500.00	106	0.02	27-Aug	6500.00	551	0.08	27-Sep	6500.00	630	0.10
28-Jul	6500.00	125	0.02	28-Aug	6500.00	563	0.09	28-Sep	6500.00	929	0.14
29-Jul	6500.00	295	0.05	29-Aug	6500.00	562	0.09	29-Sep	6500.00	963	0.15
30-Jul	6500.00	155	0.02	30-Aug	6500.00	533	0.08	30-Sep	6500.00	771	0.12
31-Jul	6500.00	211	0.03	31-Aug	6500.00	500	0.08			0	
<b>Grand Total</b>	<b>201,500.00</b>	<b>2,017.00</b>	<b>0.31</b>	<b>Grand Total</b>	<b>201,500.00</b>	<b>13,975.00</b>	<b>2.15</b>	<b>Grand Total</b>	<b>195,000.00</b>	<b>18,416.00</b>	<b>2.83</b>





### Daily Wise Average per Plate Wastage



## SOP –KST

**PURPOSE:** To establish a procedure for housekeeping (KST) activities.

**SCOPE:** The scope of KST activities is as follows:

- a) KST Manpower
- b) Handling of KST consumables
- c) Premises Cleaning
- d) Garbage Management

**RELEVANT STAKE HOLDERS:**

S.No.	Process Step	Responsibility	Authorized by
1	Preparation of Duty Roaster	KST Head	Unit Head/ Unit Chef
2	Preparation of Cleaning Schedule	KST Supervisor	Unit Chef
3	Maintenance of Chemical stock and Equipment	KST Supervisor	KST Head
4	Chemical Dilution	KST Supervisor	FSMS Head
5	Segregation of waste	KST Supervisor	Unit chef

**PROCEDURE**

**a) KST Manpower**

- The duty roaster is made by the KST supervisor by considering the intensity of operation in each area.
- Shift supervisor shall take a small briefing for all of his team members in the beginning of the shift and explain the roles, do’s & don’t to be followed on the day.
- KST supervisor checks the personal hygiene of all the employees before beginning of the shift and the same is recorded in the personal hygiene checklist.
- The supervisors shall provide the necessary PPEs like aprons, gloves, hair nets, face masks (if required) to each staff.

**b) Handling of KST consumables:**

- As per the requirements, the KST supervisor shall fill the store requisition slip (SRS) with the details of items required for a day.
- The indent shall be signed by the KST head/unit head/unit chef and is sent to the store department for issuing of the material.
- A KST personnel shall receive the items from store and acknowledge the same.
- All the chemicals & KST items issued shall be kept in segregated area, separate from the production area, under lock and key to prevent misuse and mishandling.

- Supervisor is responsible for maintaining stock and controlling the receiving and issuing of the items which shall be recorded.
- Material Safety Data Sheet (MSDS) for all chemical being used in the premises needs to be displayed in a designated area of the unit.
- Awareness of MSDS shall be taken care in the chemical usage training.

### **c) Premises Cleaning**

- Dilution of the chemicals are done and monitored by the shift KST supervisor and the consumption is recorded.
- The chemicals are diluted and kept separately away from the food.
- A cleaning schedule shall be developed at site and the same is been followed & recorded.
- The deep cleaning of the kitchen is done at least once in a week and recorded in the kitchen cleaning schedule record.
- The team shall monitor the rood-box and gum traps daily and replace if needed and any pest spotted is recorded in the pest sighting checklist.
- KST supervisor shall monitor the pest control activity and ensures the activities are happening as scheduled.
- Post pest control activity the premises is thoroughly washed within recommended time to remove the used chemicals.

### **Garbage disposal:**

- Specific areas shall be assigned for placing dustbins. The dustbins to be always kept in closed condition with its lids.
- Garbage shall be removed from each dustbin frequently when its 3/4<sup>th</sup> filled and placed in the assigned garbage room until it's lifted by the garbage vendors.
- Wet and dry garbage shall be stored separately so that there is no cross contamination between both.
- Wet garbage clearance depends on the local municipal guidelines
- After it is cleared the garbage room has to be cleaned daily using suitable chemicals and air dried before use.
- The contact details of local municipal garbage clearance team to be made available. Supervisors /Unit heads to ensure that the wet wastes are cleared within 24-36 hours.
- If there is any deviation/delay in collecting the garbage's from the garbage collector same to be recorded with proper reason.



## Scrap waste handling

Si no	Common types of Scrap items generated usually includes
1	Carton boxes part of bulk packing, recyclable plastic like milk packets etc
2	Empty oil tins
3	Glass items/Bottles
4	Scrap metal utensils/Equipment

- Specific areas to be assigned for placing scrap waste generated and should be away from production premises.
- These scraps should not be placed within the production premises.
- A vendor to collect these scrap items to be identified and assigned considering the geographical limitation and non-availability of scrap vendor operation team shall initiate and assign the scrap vendor locally who would visit as per the requirement needed i.e. or call service. It shall be documented in a book/register with suitable approval from management.
- The unit chef/unit head to decide the frequency of scrap clearance based on the volume of production/purchase scrap accumulated across the individual QFS units.
- In general scrap shall be cleared at least twice a month.
- If there is delay in collecting the scrap from vendor, the supervisor shall do a follow up on the same.
- Cleanliness of assigned scrap area to be well maintained and cleaned regularly to ensure that the area doesn't become a breeding place for pests and rodents.
- Asset management approval to be taken if any equipment /asset of QFS to be moved out as scrap when the machine/equipment can no longer be repaired/rectified.

## **Records**

Format/ Record name	Format number	Responsible
Cleaning of chiller	QFS/HC/KST/01	KST Supervisor
Cleaning of Freezer	QFS/HC/KST/02	KST Supervisor
General cleaning – Floor/Ceiling	QFS/HC/KST/03	KST Supervisor
Deep cleaning - Kitchen/Production	QFS/HC/KST/04	KST Supervisor
Deep cleaning - Pot wash	QFS/HC/KST/05	KST Supervisor
Grooming Checklist	QFS/HC/KST/06	KST Supervisor
Garbage clearance	QFS/HC/KST/07	KST Supervisor
Chemical Usage Record	QFS/HC/KST/08	KST Supervisor